THE

WESTERN

Quarterly Reporter

OF

MEDICAL, SURGICAL,

AND

NATURAL SCIENCE.

SUPPORTED BY PHYSICIANS AND NATURALISTS OF THE WESTERN COUNTRY.

EDITED BY

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PREFACE

TO THE SECOND VOLUME OF THE WESTERN QUARTERLY REPORTER.

IN presenting to our readers the first number of our second volume, we cannot refrain from expressing the high degree of satisfaction we have experienced from their liberal and continued patronage. While we perform this agreeable duty, we are also cheered by the belief that our exertions have not been without success; that we have fulfilled our original engagements, and spared no exertion to render the Western Quarterly Reporter worthy of the respect and patronage of scientifick and literary men, both at home and abroad. In conducting the first volume, we have throughout had a view to *utility*, and we shall continue to keep the same object in sight, uninfluenced by the changes of literary and scientifick *fashion*, and undisturbed by the criticisms which the plain uniformity of our manner may provoke.

As we believe that no one should venture to criticise the writings of another who has not patiently examined them, neither do we think that a review should be published, to the writing of which the author was urged by no higher motive than a wish to exercise severity as a critick, or by a desire to elevate or depress a particular party or person. We are well aware that reviews have of late, generally and deservedly lost their influence; a very great number of them may be considered as the expressions of party or personal feeling, or intended to promote or prejudice the sale of a volume. Believing the office of a Reviewer to be one of high responsibility, and wishing the beneficial influence of it to be resumed, we shall continue to discharge our duties *conscientiously*, and to the best of our abilities, regardless of the consequences which may ensue on the performance of what we believe to be right. Examining books, solely with a reference to the great interests of science

and humanity, we shall ever cling to the truth, as a rock, which, though exposed to the fury of the tempest and the rushing of the waters, has its foundations so securely and immoveaby fixed, as to bear us in safety until the peril is no more.

From the increase of our contributors, and the value of their communications, we believe the time not far distant, when the Western Quarterly Reporter may be advantageously compared with any of the journals devoted to similar purposes. The connection and unity of design observed in the work, will give a peculiar interest to it, when the numbers are bound up; and we have good reason to hope that the observations made on several interesting Ethical topicks, will be productive of benefit, even after the Reporter has attained a venerable age.

For the future discharge of our Editorial duties, we have no promises to make; as actions speak louder than words, we leave our fidelity to be tested by this rule, and our motives to be deduced from their results. If zeal and industry, joined to considerable experience, on the part of the Editor and Publisher, can do any thing for our success, we may anticipate the pleasure of many annual expressions of gratefulness to our friends, for the extension and continuance of their approbation and regard.

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ARTICLE I.

STATE OF MEDICAL SCIENCE.

WITHIN the last thirty years the discoveries and improvements made in every department of science, have been extremely numerous, and productive of the most beneficial results. The different kingdoms of nature, the air, the earth, fire, water, and even light, have been put to the question and forced to respond; each has contributed its proportion to the wants and enjoyments of our race, and every successive improvement places in our hands new instruments to effect discoveries—gives new claims to superiority over the rest of creation.

But while other sciences have dawned and risen to their meridian splendour—have passed from their infancy to manhood and usefulness, why is it that the science of Medicine remains in a state of comparative imbecility, and scarcely can be said to have emerged from the ocean of doubt and conjecture in which she has been so long and so deeply involved? Her tributaries have been pouring out for her use the riches of an unprecedented series of discoveries; her votaries have been unrivalled in zealous industry—yet, notwithstanding, her progress has by no means borne a due proportion to the march of her collaterals, nor has the increase of her usefulness been in the measure of the augmentation of knowledge.

We are hence induced to examine the causes which prevent or impede the progress of Medical improvement, that, if possible, such impediments may be removed. Should we discover that the obstacles are not insurmountable, we may be encouraged to hope: if we succeed in convincing ourselves that some are the results of carelessness or neglect, the remedy is easy; and even should we fail of detecting all the sources of injury or hindrance, the inquiry will be of service in making us careful and vigilant for the future. It is full time that the members of our profession should consider themselves as something more than mere vehicles for the administration of drugs, and that the science should be placed on such a foundation as will not slightly be shaken.

Were we attentively to examine the history of Medicine, it would not be difficult to perceive that one cause of the slowness of improvement has been the attention that was paid to particular authorities, prejudices and theories. At one time we see the whole medical world enchained and enslaved under the sway of the renowned Hippocrates, receiving his every word as infallible, defending his greatest defects with enthusiasm and setting aside the very evidence of their own senses if in opposition to the *dogmata* of their master. Changes of time only brought a change of rulers, as we find them passing from one yoke to another during a long succession of centuries, and even to our own time we find the thraldom continued though by no means as severe as it has been heretofore. The number of those who take the trouble of thinking for themselves, is astonishingly few, and hence, when an active and ambitious man wishes to distinguish himself by founding a sect, or by remodeling a science, it is only necessary for him to dress his views in pleasing and plausible colours, obtain a few facts to give him the appearance of being supported, and then to deal in violent declamation, sophistical argument, or even in downright falsifications of things clear and evident to every man. Of the great number of those who are, or wish to be thought philosophers, enough are always ready to side with the *new doctrine* and to catch eagerly at every thing which seems likely to buoy them to the surface of the stream. Having adopted a particular creed, or undertaken to support the notions of an author, they can only see facts which give support to his theory,

and are blind to every appearance that would serve to weaken it. In such a state of things it is vain to hope for improvement, and it is idle to attempt convincing these partizans of their error. Yet, such is the constitution of our nature, that we seize on novelties with avidity and imagine that we grow wiser by every change. Although convinced that our old theories have brought us no nearer the desired object, we flatter ourselves that what, at first view, appears plausible, will prove on closer examination, to be really excellent. We then lend ourselves to the delusion, become converts to the doctrine, are soon fairly satisfied of its total or partial inadequacy, again lament the imperfect condition of our science, and—recommence the pursuit of a similar phantom.

Next to the prejudicial influence of a blind devotion to a particular authority, stands the evil resulting from the opinions inculcated by particular schools or sects. In these there is ever to be found a spirit of rivalry not always of the best or noblest kind—a jealousy which will not allow the merits of discoveries or investigations originating elsewhere, and a desire to elevate the sect or school at all hazards, even that of concealing or blackening the merits of others. Thus a man's rank in his profession, in many cases, comes to depend on the particular school in which he obtained his degree rather than on his individual worth, and the power or fashionableness of the sect whose opinions he has adopted, are often adduced as triumphant evidences in his favour. This has a tendency to prevent him from doing any thing to enlarge the boundaries of his science or to effect any improvement likely to weaken the influence of his party. Schools of Medicine have not always been the sources whence frequent improvements emanate. To be sure a vast deal of good might and ought to be done by professors. In frequent instances they have done all that could be expected of them; but often these great bodies are the last to relinquish certain errors and prejudices which have grown ancient and venerable within their walls. Sometimes they are preserved and repeated from a fond respect for the memory of some departed teacher: again they seem to have acquired a prescriptive right to their place, and their very ridiculousness is secured from profane inquiry. It is always difficult, moreover, to produce a change in the management of an old insti-

tution, and hence does it happen that they become, as it were, superannuated and exhibit all the signs of decaying and imbecile senility. Where is the school of Leyden once the great focus of Medical knowledge and thronged with admiring pupils from all countries? The having *once* possessed the powerful intellect and eloquence of the immortal Boerhaave, could not suffice to sustain it—his activity and enterprize were the living principles—the soul, which, once removed, left the body to return to its native insignificance. What is the school of Edinburgh *now*, compared to her condition when sustained by the mighty efforts of Cullen, of Monroe, and of Black? Inquire at London, at Paris, at Philadelphia, and the answer will be found in the youthful vigor, the eager spirit of investigation and the freedom of discussion so much fostered and so much approved in all these rising institutions.

Perhaps the evil spirit of book-making, strange as it may seem, has served to fetter the human mind extremely, and retard the science of Medicine in particular. A man who sees no other way of speedily bringing himself into notice, determines to make a book. Having chosen his title, he sets himself to compiling and garbling until he has succeeded in making a volume of sufficient *thickness*, which, by the aid of reviews written by himself, through the carelessness of one person and the good nature of another, gets sufficiently into circulation to prevent a good work on the same subject from being commenced, and thus for years hangs as a clog on that part of the science, forbidding all hopes of advancing unless at a snail's pace. The evil rests not here: the example is productive of imitators, and original inquirers are, in despair, obliged to resign the field to the retailers of other men's thoughts, the defenders of obsolete theories, and the revivers of follies too gross to outlive the author by whom they were engendered. The time spent in reading such works is time entirely lost, for, in the greater number of cases, the patience of the reader is exhausted, and, instead of being led on to study the subject with enthusiasm, he throws it from him with disgust. A professed book-maker of the sort here referred to, is a great injury to the art or science to which his compilations relate, and it would be better for them had he employed his time in direct aggressions on their character, than in thus appearing to lend them his support.

The periodical journals do not perform as much as they *might* for the benefit of the science of Medicine. It is vain for their editors to suppose that, by publishing long miscellaneous essays, or detailing the mere *news* of the scientifick world, they can produce any very beneficial impression on the practitioners of our art. There is no body of men on earth who should be more frequently invited to consider their high duties and responsibilities to society than physicians, and this can only be done by those whose duty imperatively bids them perform the task however unacceptable. It is not enough that a man or men undertake the editorship of a paper and prepare for publication whatever is sent them on whatever topick.—The very situation they have placed themselves in, tells us that they believe themselves capable of doing more. That they do not effect what is in their power, is of decided injury to society as it is unquestionably to their own disparagement.

The science of Medicine is not as useful as it might be on account of the impediments which are thrown in its way by the prejudices, caprice and ignorance of society at large. The physician, in a vast many cases, is not accurately informed of the history of diseases: circumstances of great importance are altogether concealed or entirely misrepresented; he prescribes on such information and perhaps never arrives at any thing like a correct idea of the case. Should some disease appear whose symptoms are dreadful and inexplicable in the existing condition of knowledge, the unfortunate practitioner risks his whole business if he ventures to ask for permission to examine the dead body. In this way society holds back the profession and prevents it, very possibly, from effectually checking diseases which, for want of the knowledge that might be thus acquired, are permitted with impunity to ravage and destroy. The evils flowing from imperfect education we have heretofore treated of: these are likewise chargeable on society, generally and individually, and it is needless to repeat *how* this want of education impedes the progress of Medical improvement.

We cannot spare room at present for a more prolonged discussion of this subject, although its importance is such as to justify every exertion for the removal of the hindrances thrown in the way by the pride, the folly, or the ignorance of mankind.

The men who look around with philanthropy and perceive

how much is yet to be done for humanity before it can attain to that degree of happiness which is certainly to be enjoyed in this life if it be correctly pursued, cannot but lament that the science in which all the various branches of knowledge concentre should be in general so unable to effect the purposes for which it was intended. This source of regret may be speedily removed if individuals who are directly or remotely concerned will bestow the attention on the subject which its importance demands and the interest of society requires. They should not be deterred from offering their individual services and examples in the cause, as the work can only be accomplished by individuals consenting to effect the same design and uniting in a permanent struggle for the continuance of its execution.

ARTICLE II.

OBSERVATIONS ON BICHAT.

TRAITE DES MEMBRANES EN GENERALE ET DE DIVERSES MEMBRANES EN PARTICULIER: PAR XAV. BICHAT.
ANATOMIE GENERALE PAR XAVIER BICHAT, &c. &c.

IT is not an uncommon occurrence to discover that an author of distinguished celebrity is praised for his excellencies until the very basis on which his fame rests is forgotten, and that he receives universal homage and respect as well from those who have never examined his works as from such as have bestowed on them the most serious attention. A general and undiscriminating praise is better than a confession that we have not read or that we know not how to admire, and a concurrence in a common expression of regard is easier than the perusal of volumes which are confessedly employed in severe and abstract investigations. This is, in our opinion, the reason why the works of the illustrious Bichat have been so much praised and have produced so little fruit—why they have been eulogized by all and imitated by few or none. Indeed the extravagance of commendation indulged in by numbers, has often prevented men from attempting to study these writings, much less to imi-

tate the author, as he is held up as entirely inimitable, as having fixed a limit to certain inquiries beyond which no man can presume to pass, as being possessed of a super-human genius, and as having performed all that could be desired in the departments of study he selected.

It is time that a more correct appreciation of his true greatness should be made, in order that his works may become more extensively useful and more generally known. It is time that a proper view should be taken of the striking peculiarities on which his fame rests, that it may be seen wherein he was eminent and superior to his compeers—that his excellencies may be imitated and his defects avoided.

We collect from the accounts of his life that have been published, that he was enthusiastick and indefatigable in his studies and never to be daunted by the difficulties he was obliged to encounter. That he was modest and patient we are sure; for with this ardent and enthusiastick temper there is always present a consciousness of eventual superiority and success which gives an enduring patience and awakens a generous reserve lest the feelings of others should be wounded. Yet we find that when the publick teacher in the medical school was unable to appear, the young Bichat was prepared to perform his duties in such a manner as to place himself entirely above all his fellow students.

Men are often led to perform great and extraordinary things by the situations in which they are placed, which they otherwise might never have thought of or attempted. Selected as an assistant by the celebrated Desault, and placed conspicuously before the students of Medicine, at once an object of scrutiny and beyond doubt of no small degree of envy, we are not surprised to find Bichat eager to do something for the permanence of his renown and willing to endure much labour for the sake of acquiring fame. His pecuniary necessities were supplied, and the stimulus of the higher incentives were continually acting on his mind, urging him on from one conquest to another. As he advanced his views became more extended, his ideas more comprehensive, and the hunger of his soul more intense after those fruits which only ripen near the summit of the temple of Fame.

His writings are uniformly characterized by a precision and

logical severity of the most admirable kind; a freedom from affectation of ornament or studied efforts at eloquence; flowing from facts; uninfluenced by imagination; simple, even at the risk of some harshness of style; and always bearing the marks of profound, original and patient thought.

The "Treatise on the Membranes," the immediate precursor of his "physiological researches on life and death," and his "General Anatomy," is a sufficient proof of the correctness of what is above stated. The first hint of this work was derived from *Pinel*, who was led to class inflammations according to the characters of the organick affections, thinking that, as these affections were various, the structure of the membranous parts were not identical. This Bichat proved in the clearest manner by his researches on these membranes individually, and was led by these investigations to draw those conclusions relative to organick and animal life, which were subsequently more fully developed in his other works.

The Treatise on the Membranes is conducted according to the soundest principles of Analysis. He first divides them into simple and compound, and, beginning with the simple, he advances by the sure method of experiment to examine every variety of the membranous texture in all its different relations, under every aspect, and in every situation in which it is to be discovered. As a model for conducting philosophical investigations, it will ever remain a noble monument of his strength and patience, of his severe study, and of his great powers of analysis.

The General Anatomy is the work in which we like best to contemplate the genius of Bichat, as it is in this that he seems to tread on his own domain, and his spirit pours itself out with all the energy of freedom. Having examined the system as a mass, he now comes to investigate its elements, to consider the different structures without reference to particular figure or situation, and traces the analogies by which they relate to each other. The inferences he draws are in general of the most extensive character, and lead us far onward in the study of the organizition and of the physiognomy of man. He seldom leaves demonstration for argument—never substitutes fancy for fact. He occasionally is betrayed into erroneous conclusions relative to the design of certain structures, but

always atones for it by the cautiousness and distrust which his example teaches. The rigid examination of facts and the minuteness with which he investigates every thing, to many readers appear tedious, as they are accustomed to books written for mere popularity, in which the authors are in the habit of jumping at once to conclusions, or of substituting a play of fancy for severe ratiocination. But as the object of Bichat is to prove incontestibly all that can be proved—to build up an edifice capable of defying the shocks of revolution or the turbulence of controversy, he pursued the course best suited to effect his object, and succeeded in building one that outrage cannot injure and time will not destroy.

His fame then is based on the excellence of his researches, the patience and philosophical character of his investigations, and the utility of his inductions. There is not in any of his works that ebullition of fervor which indicates an indulged imagination, but there is a steady glow of enthusiasm which shows a vivid imagination under the dominion of an energetick and vigilant understanding—a continued heat which convinces us that there must be a well fed internal fire. But he has done nothing so well as to forbid the attempt to excel him; he has done nothing so perfect as to render future efforts unnecessary; he possessed no talents which vast numbers may not be blessed with; he was placed in no circumstances which may not again occur; *his* successful acquisition of fame should not prevent *any one* from reaching after other laurels. In this country, it is true, there are few opportunities for young men to distinguish themselves in the same way: we have no institutions supported by government, in which men, freed from the anxious cares pressed on them by the necessity of struggling for their subsistence, may devote themselves to the advancement of knowledge and the good of mankind. In the institutions devoted to the instruction of youth, the professors are too much employed in publick teaching to be able to attend to private investigations, and private individuals must forego such studies that they may earn their bread. There is not the least reason to doubt, if similar opportunities were offered, that we should find in this country talents of the brightest and best character brought into action—the literary and scientifick glories of the old world equalled in the new, and the arrows of bitter and

impertinent criticism triumphantly turned aside by the shield which genius and science would interpose. Should this never be done, individuals, though unsustained, may effect great things, and eventually attain a permanence of reputation by diffusing around them a love for the excellence of wisdom, when upheld by the loveliness of virtue.

ARTICLE III.

MEDICAL JOURNALS.

THERE are evils of great and increasing magnitude, flowing from these journals, which call loudly for immediate attention and correction. The original design of these publications is thought to have been, the diffusion of professional and scientifick improvements and intelligence, in the speediest and most easily accessible manner. But to judge from the works themselves in very frequent instances, we should be induced to suppose that it was their desire to obscure things, already sufficiently plain, as well as to add to the labour and expense of the reader, by accumulating as much matter as possible, having no relation with the subjects discussed.

The corruption of the English language is the first evil of which we shall speak;—in a great many cases it seems to be the result of the negligence or the haste of writers. When preparing a translation, if a word presents itself, of whose peculiar signification they are not altogether certain, rather than be troubled with the examination of dictionaries, or with inquiring of persons more familiar with the foreign idiom, they introduce (into the body of what they would have us receive as a *translation*) the original word or phrase, separated from its context, and leave the unlearned reader to discover the meaning, if he can.

Translation under any circumstances is an exceedingly dull and inglorious business; for if we translate a good book, *well*! we have merely done justice to the author If we make a *poor* translation, the blame falls on the translator alone, as he should have better understood the business attempted. When a translator interlards his work with words or phrases of the original,

it is proof positive, that he is *not sufficiently acquainted* with the idiom of the foreign language, or with the comprehensiveness of his own. It is possible that he may not be industrious enough to finish his work as it should be done; and under either of these views, he is unfit for a publick instructor. There is not a phrase in *any language on earth* the *sense* of which may not be expressed in *English*, if not by a direct *correspondent*, at least by a circumlocution. No one can pretend to say that an intelligible *English* circumlocution, is not far superiour to any mixture of German, Latin, French, Italian, or other expressions that could possibly be adopted. The *sense* should be the great object of the translator, and it is *all* that he can give us, if he really makes a *translation*. The peculiar graces or beauties of composition are materially dependent on the *idiom*, which is exclusively the property of the language. An attempt to produce the same beauties, or equal strength of expression, by close or *verbal* imitation, is followed by a harsh and mongrel dialect, which can be scarcely intelligible, as the words belong to one country and the idiom to another. To exemplify this, it is only necessary to refer to the Boston Translation [*metaphrase* would be more correct] of the 1st Vol. of Bichat's *Anatomie* Gènérale. The translator has succeeded in giving English words in place of the French expressions; yet beyond doubt, a great part of the book, notwithstanding, is not in the *English language*. We account for this, by his telling us that the translation was begun in *Paris;* certainly not the best place in the world for rendering *French* into the *English idiom*.

It is not only the Translators for the Journals who are guilty of these stupidities, but some of the *original* essay writers and criticks, carry their folly to so ridiculous an extent as to seem ashamed of using a plain English phrase, lest their learning should be doubted. Sometimes we hear them speaking of an "exquisite *esquisse*," whence an English reader might infer, that something was meant for which the English language offered no equivalent expression; yet the words "exquisite sketch" are fully as expressive, far more intelligible, look quite as well in print, and are not so very like an "exquisite" *barbarism*. The introduction of barbarisms, is too frequent and too studied not to be the result of pedantick affectation. Hence we find that some journalists, after describing a disease from its

commencement to its termination in the death of the afflicted, consider it too vulgar and too English, to talk of the "dissection" or "examination of the body," or "appearances discovered by dissection;" therefore they give us "the *post mortem* appearances," or "sectio cadaveris," for fear it should be suspected that they dissected the body *before* death. We might give already a considerable list of similar fooleries, but we wish to enlarge the collection, in order to employ it more effectually hereafter. We soon discover that the *affectation* of the journals is copied in professional conversation, to the great benefit of the character which the Medical Faculty have long maintained for dealing in *jargon*.

It is a well established rule in good society, never to converse in a foreign language before persons unacquainted with it; neither should a medical writer venture to introduce foreign expressions to his readers, (who, he tells us, are ignorant of the language, by his attempting to translate for them) without pointed censure for his rudeness and disrespect. As to those "small personages" who by talking *jargon* betray their want of education and their inability to use their mother tongue correctly, little need be said; society will not be apt to catch the disease from them, as men are generally quicksighted enough to descry an ass through his disguise, even were he not so immediately to be detected by his braying.

As we are determined to do all in our power to lessen such evils as we may be able to perceive, we shall hereafter amuse our readers with a selection of the precious tags and phrases, which these gentlemen, in the fulness of their benevolence, have at different times bestowed, to supply what the *extreme poverty* of the English tongue could not afford. That each may receive the honours due for this service, we shall not fail to give particular references and credits, for all the *elegancies* which we may display from their pages.

The French journals appear to great advantage when contrasted with those of other countries. They are more condensed, and are neater and cheaper. They are intended for vehicles of intelligence and therefore never weary and disgust the reader with such rambling, endless and irrelative flourishes as we frequently see prefixed to English criticisms. Nor are we ever tantalized by the frequent recurrence of a foreign

word which the reader does not understand and the writer could not translate. It must be in some degree owing to this cause that the French journals are so cheap, as they are not puffed up with windy introductions, inconclusive digressions or pragmatical dissertations on topicks having a very remote and almost inappreciable bearing on the science.

We have made these remarks without reference to individual works. It is not our wish to insinuate that our own journal has been exempt from errours and blemishes. We have endeavoured to avoid *barbarisms*, and not only to use expressions *entirely* English, but in choosing between English words, it is our rule, always to employ the one which expresses most, and is the easiest to be understood.

ARTICLE IV.

MELANOSES.

FROM MAGENDIE'S "JOURNAL DE PHYSIOLOGIE."

Considerations on an Organick Alteration, called Black Degeneration, Melanosis, Black Cancer, &c. by G. BRESCHET, *Principal Anatomist to the Faculty of Medicine of Paris, Surgeon in chief to the Foundling Hospital, &c.*

Translated for the Western Quarterly Reporter.

WE frequently find in the substance or on the surface of some of the animal textures, tumours or collections of a deep yellow, brown or black matter. M. Dupuytren first remarked the existence of these morbid substances, and shortly after Messrs. Bayle and Laënnec, have made them the subject of investigation, and bestowed on them the name of *Melanoses*. This word expresses nothing but the colour, and this designation is neither very rigorous nor very exact, as these alterations are more often found of a yellow-brown, soot or bistre colour, than of a perfect black. However, I have found some which were perfectly black, and would colour the texture of linen or paper, like an aqueous solution of India ink.

I have found the black matter in almost all the organs of the economy, but less frequently in the thickness of their textures than between their meshes.

In the case of this morbid matter, as in some others which are called degenerations, no traces of organization are offered at any epoch of their formation. The melanous tumours examined at different stages of their developement and in very different organs, have never presented to my observation any vestige of the existence of vessels, nerves, cellular or fibrous texture. These substances appear to me to be the product of a secretion, rather than the result of the decomposition or degeneration of the texture.

I have found this matter in many species of animals and particularly in the dog, the cat, the rabbit, the rat, mouse and especially in the horse. It is principally in the latter animal that I have observed it very often. Messrs. Girard and Son, and M. Dupuy, professor in the royal veterinary school at Alfort, have frequently sent me these tumours, and in every instance, they were removed from grey or white horses. The same observation was before made by Gohier, of Lyons. It is not in my power to give a sufficient reason for this peculiarity.

The melanoses are presented under various forms. Sometimes the matter is encysted, at others, it is not contained in any thing and appears to be exhaled on the surface of the textures, or effused within a cavity.

1. *Encysted Melanosis.* It is less a true cyst, than the membrane which forms the adipose texture. We know that the cellular texture is composed of two distinct Elements: 1st a fibrous or shining, dense, resisting, whitish or yellowish laminous texture, and seeming to belong essentially to the ligamentous fibre: 2d a sacculous texture offering numerous cells on the sides of which the vessels are disposed. It is in the cavity of this texture that the fat is deposited, and the granulated or mamillary appearance of the fat is owing to this structure; it is this which retains it, and prevents its escape when it is cut or exposed to heat. Many other pretended degenerations are produced in the same manner, and depend solely on an alteration in the secretion and accumulation of the matter secreted in the little cells, for the fat. All the organs containing a texture similar or analagous to the adipose; that is to say, which are formed by a serous cellular texture, or a texture disposed so as to constitute thin, semitransparent pellucid membranes, with a perspirable surface, and throughout analagous to serous

membranes may become the seat of melanosous collections.

In the adipose cellular texture, the melanoses appear really encysted; the cysts are numerous, agglomerated, and most frequently resemble bunches of grapes. If we try to separate one of these cysts, we find, that there is a point by which it adheres to the neighbouring texture; it communicates with the cysts which touch it, and presents by this point a sort of pedicle supporting the vessels. Some fibrous filaments pass between the granulations, sometimes cover them, but never penetrate the little sack. There is then nothing really organized except the thin membranes which we have taken for the cyst; but the matter contained offers no appearance of fibre or of vessels. The injections I have made of coloured and very thin fluids, such as alcohol, spirits of turpentine, fixed oils, gelatin or fish glue, and of mercury, have never enabled me to discover vessels in the substance of the black matter. My injection has done nothing but show vessels on the enveloping membrane, and sometimes it has escaped into the cavity, and mingled with the morbid collection.

The matter contained in these membranes is sometimes liquid, diffluent, pultaceous, or hard, concrete and disposed in plates or leaves. Its colour, when in solid masses, is of a deep brown or black; spread on linen or stirred in a small quantity of water, it appears of a bistre colour, and occasionally has a yellow tint. This homogeneous matter is without any very marked smell or taste; it is opaque, miscible with water and Alcohol, which prevents us from preserving it in the latter fluid; exposed to the air or placed in water, it putrefies slowly and with difficulty; the colour it imparts to cloths or the hands on touching it, has little solidity and is easily removed by washing.

The *melanoses* which appear to be encysted vary in size, from that of a pea up to the size of a pigeon's egg. If they are found much larger, it is such as are not single, but the result of the joining of many small tumours. Thus in voluminous melanoses little granulations or inequalities may be distinguished, that were originally so many separate and distinct tumours. In man I have found these melanoses mixed with analagous tumours, of an encysted appearance, which contained a very yellow fat, a viscous or mucilaginous matter, or a sort of jelly.

In horses, melanoses shew themselves under the shoulder

blades, in the pelvis, on the verge of the anus, on the vulva, and along the caudal vertebra. We remark them under the skin, and they form numerous chaplets, composed of grains from the size of a filbert to that of a small egg. In some cases they are of lesser size; for if we divide the morbid mass, we see that it is composed of many little cells which were the sacks of the adipose texture, which disposition has been well pointed out by Gohier; particularly as he has used a just comparison, in likening the physical characters of the matter contained in the sacks, to ink.

This matter may be from the first deposition soft, diffluent, or hard and consistent, and afterwards slowly changed so as to resemble boiled flesh.

2d. Another form of melanous productions is that of false membranes, or of membranaceous plates composed occasionally of many folds, and deposited on the surface of mucous, serous and other surfaces. These species of false membranes are either somewhat hard or soft and almost fluid.

Sometimes the latter of the consistency of boiled flesh colours the surface of the textures and forms a coating, or else it may be much more liquid, and being poured into the cavities colours the fluids belonging thereto. In some cancerous degenerations of the liver, of the intestines, of the stomach or the womb, we find the serosity of the peritonæum strongly tinged with black by the matter which we are treating of.

We do not admit the true cyst as a melanosis: we consider the latter as the product of an exhalation into the little sacks of the fat, and we have not recognized any trace of organization in this matter. Effused blood forms for itself an envelope, and the effusion becomes encysted: it is not thus with melanosis: the cyst in the latter is nothing but the membrane of the adipose texture on the condensation of the neighbouring textures, of which we may still distinguish the nature. Yet the matter of many other effusions, and the secretions of serous sanguineous and albuminous fluids, are in a short time enveloped by a covering at first weak and of an inorganick appearance, which ends in soon becoming organized. This circumstance induces the belief that if the matter of melanosis is nothing but blood, it is blood of an altered character and which has lost its plastick power or its tendency to organiza-

tion; which may distinguish accidental effusion of an animal humour from an effusion of morbid matter.*

The bloodvessels are sometimes surrounded by these tumours, and the vessel is concealed in the middle of the melanose matter. When the black matter is not concrete, but liquid or half liquid, or when it is deposited in layers on the surface of serous, mucous or other membranes, the small bloodvessels, (which I presume are the arteries, although I cannot assert them to be so,) contain a black, concrete or nearly concrete matter entirely similar to that which is thrown out on the membrane itself. This fact which I have frequently observed on serous and mucous membranes of adults affected by melanosis, and in little children affected with inflammation of these membranes, has also been observed by some pathological writer.—Lately I have spoken of my researches on melanosis to my friend Dr. Cruveilhier, author of an excellent treatise on Pathological Anatomy, when he remembered that he had made similar observations, and communicated the following facts:

In cases of gastritis and enteritis with jelly-like disorganization, without any of the ordinary traces of inflammation, without change of colour, &c. he has constantly observed a black matter in the vessels which have escaped disorganization and in those which were near the injured parts. An attentive examination of these vessels has enabled him to perceive that the black colour was owing to globules of the same hue, globules very distinct and continued in these vessels.

In the body of a woman about sixty years old he has found the internal surface of the stomach covered with black rounded spots similar to large *petechiæ*, and encircled by a reddish arcola. He believed at first that these spots were formed by extravasated blood, but after having raised the matter which composed them, he saw that they were analogous to those of the lymphatick ganglions of the bronchiæ. Slight excavations at all the points corresponding to the seat of this black matter.

* In other words, the effusion of *morbid* matter presupposes a *diseased condition* of surrounding parts, in consequence of which no organizable coagulable lymph is formed by the adjacent arteries, without which a cyst cannot be organized. The plastick power of effused blood is—*nonsense*. When the surrounding parts are free from disease, effused *blood* becomes encysted, *because* the *vessels* are possessed of *their* proper powers. EDITOR W. Q. R.

The intestine *ileon* exhibited an eruption exactly similar, with this difference, that the blood or black matter appeared to be combined with the mucous membrane instead of being extravasated as it was in the stomach. The termination of the *ileon*, the *cæcum*, and ascending *colon*, besides the eruption, showed a deep red colour with thickening of the mucous membrane.

The melanosis is common in the cutaneous texture. I have found in many subjects an infinite number of small black tumours similar to millet seeds, which were seated in the skin and appeared to elevate themselves from the mucous network of Malpighi. I have collected and examined a great number of these small black tumours on the body of a woman who died in 1816 in the hospital of St. Louis. Professor Alibert has published in his Nosology this observation and the drawing representing the disease. He has designated that disease by the name of *black cancer;* but I doubt whether we can consider this affection as a cancer: it differs therefrom in many particulars, and I have but a single fact of the ulceration of *melanosis*, which I owe to my friend Dr. Fevius, of the hospital *de la Salpetriere.*

An old woman died in this hospital of an ulcerated melanosis. There was in the right groin an ulcer of several inches in extent, at the top of a black *mamillated* tumour. This ulcer contained less of pus than of a blackish pultaceous matter, which tinged paper and clothes like bistre. Many tumours, from the size of a nut to that of a hen's egg, showed themselves across the skin of the inguinal region. The skin of the thigh had similar tumours at different points. and the breasts contained them in great numbers. I have made many anatomical investigations of these tumours and have preserved drawings of them.

The subcutaneous and inter-muscular cellular texture is frequently the seat of *melanosis;* and in places where it is loose or abundant, as about the genitals, in the neighbourhood of the rectum, in the pelvis, along the anterior and lateral parts of the spine, the *melanous* tumours develope themselves and acquire a considerable size.

The *melanosis* is also found in the fibrous texture, but it i particularly in the portion of the system which belongs to the

muscles, and in the interstices of the fleshy fibres, that the black matter is deposited. I have found it very frequently in the muscles of animal life, though I have never seen muscular fibres passing through the black tumours. We have already said that it is between the fibres that the deposition occurs.

Some muscles of organick life, particularly the womb and sometimes the heart itself, contain *melanoses*. Lately I have found many small tumours of this kind in the heart of a celebrated physician.

The bloodvessels are enveloped by these tumours, and I have stated that I have seen the *melanous* matter in the cavity of the small vessels.

The lymphatick vessels and especially the ganglions frequently exhibit these organick alterations.

In the mucous and serous textures they are not uncommon, but in the last of these textures the *melanous* matter is on the surface of the membrane and it forms a blackish or brownish bed more or less consistent, oftener than in the thickness of the membrane.

I have seen nerves in the middle of *melanous* tumours, but have never distinguished any of their filaments penetrating these tumours, and the nervous texture itself appeared rather surrounded than penetrated by these productions. I have never discovered any well marked instances in the substance of the brain and in the spinal marrow. Such is not the case with the tuberculous matter or the scrofulous degeneration. I have met with tumours of this description very often in the head and spinal column of young children. In one instance, however, I found in the middle of the basis of the skull, *melanous* tumours; but I believe that they were less developed in the cranium than in the orbit, where many black tubercles existed, and the eye itself contained them, having been pushed forward and in part destroyed by the developement of these *melanoses*.

I have not yet discovered this disease on the bones, within their cavities, upon the synovial membranes which cover their articular surfaces, or on the cartilages themselves.

The synovial membranes which are so analogous to the serous, ought however to be the seat of these *melanoses*, although observation has not yet shown this to be the case.

The *parenchyma* of the viscera is very frequently filled with melanoses, and among these viscera I shall mention the lungs, liver, pancreas and kidneys. They are rare in the spleen, and still more so in the other parts of the *erectile system.**

The lungs, the divisions and subdivisions of the bronchia, and the liver, have furnished numerous examples of considerable *melanous* tumours. Many cases of this kind have been published by Messrs. Boyle, Laënnec, Esquirol, Chomel, and we may add many others which are proper to ourselves. We have also observed *melanoses* in the maarmary gland, but the fatty tissue enveloping the secretory organ was the principal seat of it.

What are the disturbances of the economy in the train of which these melanoses ensue? What are the changes which take place in the textures where they show themselves, and by what general or local signs can we determine their presence during life? I shall avow that pathology and pathological anatomy have every thing yet to discover in this respect, and that the observers have left us nothing by which we can point out the means of establishing a diagnostick.

The formation of *melanoses* cannot occasion much disturbance at the time of their origin, since it most frequently happens that it is only on examination of the dead body that they are perceived. Nevertheless, I recollect that many patients suffering this disease, have shown a yellow skin and great debility, and the cellular texture was more or less œdematous, and that, in various ways, these patients resembled scorbuticks at the end of the second period of their disease.

Chymical analysis confirms and proves the correctness of our ideas on the formation of *Melanoses.* These morbid substances have been examined by two experienced chymists, and they have obtained the same results. Mr. Barruel, chief chymist to the Medical Faculty of Paris, has operated on the *melanoses* found in the human species; and Mr. Lassaigne, chymist to the veterinary school of Alfort, has decomposed those taken from horses. The following is extracted from the note sent me by the last named gentleman.

These tumours were composed—

1st. Of coloured Fibrine.

* Corpora cavernosa penis, corpus spongiosum urethræ, &c. &c.

2d. Of a blackish colouring matter soluble in sulphurick acid diluted, and in the solution of sub-carbonate of soda, communicating to them a reddish colour.

3d. Of a small quantity of albumen.

4th. Of chloruret of sodium, of sub-carbonate of soda, of phosphate of lime and oxide of iron.

We readily see by the results of this analysis, that the composition of these tumours is similar to that of the clot of blood. In fact, with the exception of the blackish colouring matter, which seems to have undergone alterations, and to be in part combined with the fibrine; we meet with all the other principles contained in the clot.

The following is the analysis made by Mr. Barruel, at my request, of *melanoses* taken from different subjects of the human species. I relate in detail the operations of this chymist, that they may be verified and repeated by all the persons who may remain in doubt as to the composition of these morbid masses.

A portion of the black matter was beaten in a marble mortar, with a certain quantity of distilled water; it was very troublesome and required a long time to reduce this substance to pulp; the whole was poured on a filter; the liquid which passed through, was at first blackish, but soon afterwards it flowed limpid, clear and of a slight faun colour.

This new liquid filtered again, gave slight flakes by addition of chlorine; it became turbid by boiling, which proves that it contained albumen, but in small quantity.

The matter remaining on the filter having been removed with care and treated in the hot way, by sulphurick acid and by water, in the proportions indicated by Vauquelin, for the extraction of the colouring matter of the blood; the filtered liquor had a vinous colour, sufficiently marked, and was slightly transparent. Left to itself during five or six days, it deposited crystals in very fine needles and of many lines* in length.—These crystals on examination were recognised as the sulphate of lime. The liquor in which they were formed did not lose either its colour or transparency in adding to it ammonia, drop by drop until the acid was completely saturated. In this operation the colour of the liquid is singularly deep, and after some hours of rest a deposit is formed of a considerable quantity of

*The French line is one twelfth of an inch.

ses have considerable connection with hemorrhages. It is, however, more important than is believed at first sight, to have observed and demonstrated that certain organick alterations, improperly named degenerations, are nothing but depositions of morbid fluids made by a process that may be compared to that of secretion.

Does there exist in the animal economy, either in the regular performance of its functions or in a diseased condition, any secretions analogous to that which constitutes *melanosis?*

If, in the study of anatomy and pathology, the search after analogies was not abused and did not easily lead astray, I should say that the fluid of melanosis has, probably, analogy with the black matter of the choroid coat, of the iris, of the placenta in some carnivorous animals, and with the colouring matter of the Africans. In fact, in all these cases we see that the colouring matter is formed by very vascular textures.

In many organick alterations we observe secretions of black matters more or less abundant. Who has not seen vomitings of black or sooty fluids, and alvine excretions of the same colour, in the case of cancerous affections of the stomach and intestines? Is not the sooty or blackish covering of the lips, of the gums, and of the tongue, in low fevers, a matter similar to melanosis? and do we not find traces, in both instances, of the deep yellow, of the brown, and of the very intense black? The black vomit and some vomitings of blood, show the excretion of a black matter, the physical characters of which do not permit us to recognize the blood. I have often examined these excreted matters and frequently have been unable to perceive the character of the blood in them. All these fluids resemble *melanous* liquids.

We know that persons suffering under yellow fever, pass by the mouth and anus a matter which many authors compare, as to colour, with coffee-grounds, a character which distinguishes it from blood and makes them to resemble melanous fluids. Mr. Rochour, who has observed in the West Indies a great number of yellow fever patients, has assured me that the black vomits were nothing but alterations of the blood. It will be of importance that the light of chymistry should be thrown on this point of pathology, and, perhaps, then we shall find our surmises changed into certainty.

I also presume that the jaundice is caused less by the bile than by the blood; and I found this opinion on observations in morbid anatomy collected at the Foundling Hospital from the bodies of jaundiced infants. We know that a certain degree of yellowness constantly appears a short time after birth. Ought we to believe that the bile is the cause?* and is it not more natural to attribute this appearance to the changes which take place in the circulation? The yellow tint has produced the mistake, but it is certain that it may be owing to the blood. We know that in slight contusions, or in those where resolution is almost perfect, the skin, instead of being blueish, exhibits a yellowish tinge.

ARTICLE V.

PRACTICAL ANATOMY.

A KNOWLEDGE of practical anatomy is by no means difficult of attainment. A person convinced of its real importance, and who is aided by a good method, need only persevere for a short time to be satisfied of this truth. All the difficulties vanish from the presence of industry; the obscurities have no existence but in books: a few lessons under the eye of a skilful teacher, show the student that there is no hindrance which may not be readily removed.

In anatomy, as in other sciences, the student should begin with what is most simple. His first dissection should be made with a view to the acquisition of facility in using the knife, and of obtaining a general idea of the connection and relation of parts; to accustom his eye to the appearance of the whole structure when the coverings are removed, that he may more correctly judge of it when he examines the like surgically. He may then devote himself to the examination of the muscles, that he may be able to understand how the members and trunk

* Undoubtedly; unless more conclusive evidence be adduced than is offered in this place by Mr. Breschet. The jaundice of infants is vastly different from the mottled yellow and green remaining after a bruise. We see the conjunctivæ rendered intensely yellow, together with the membrane lining the mouth, and the whole substance of the skin. But we have conclusive testimony of the bile being the cause of the discoloration when we find the bowels costive and the feces clayed; when we perceive the immediate alteration produced in the skin by the exhibition of purgatives, and discover that this change is accompanied by a corresponding alteration in the evacuations of the intestinal canal. Ed. W. Q. R.

of the body are moved. In every examination of a peculiar structure, he is to bear in mind the necessity of observing the *relation* of all the parts. He may next proceed to the investigation of the bloodvessels, in which he will be assisted by the art of injection, by which fluids of different colours are thrown into them, enabling the investigator to trace the minutest branches with regularity and precision. After this, the advances of the student may be governed by circumstances, as he will have acquired sufficient skill to study with advantage any portion of anatomy. He should always leave the most difficult to the last, and always be methodical in his application.

Practice is essential to the acquisition of a masterly use of the knife, yet, if entirely unaided by the experience of others, time may be consumed and patience exhausted without learning much more than bad habits. The proper method for an entire novice to follow, is, first to understand on what part of the body his dissection is to be made, then to make himself thoroughly acquainted with the parts he is to find there, as well as the succession in which they will be presented to him. He thus has a definite end in view. As his mind is considerably prepared for all he is to meet with, he is not kept in confusion and anxiety by cutting into parts of which he has never thought; and he will learn to estimate his progress by the degree of knowledge acquired—not by the extent of surface passed over.

As it is the object of the student to learn how to operate on the living, as well as to separate the parts of the dead body, with the knife, from the first he must endeavour to use it with elegance. Instead of holding it in an awkward and slovenly manner, he must strive to unite all the advantages of gracefulness of motion to firmness and precision in dividing the parts. The knife should be held between the thumb and fingers in the manner of holding the writing pen. The hand is to be sustained in a similar manner on the ring and little fingers, and the cuts are to be made by moving the knife thus held from left to right or from right to left, only turning its edge by rolling it between the finger and thumb. The dissector, by keeping his hand thus supported, will always have the knife under his controul and not be liable to divide parts not belonging to

the dissection. The tenaculum is to be held in the other hand as much as possible in the same way, remembering that the point is to be held so as to guard against wounding the one in which the knife is placed. The forceps should be always used in preference to the tenaculum where it can be done. The knife should be used either with the right or left hand as may be most convenient. This art is not difficult to acquire, and gives the dissector or surgeon great advantages in many investigations and operations.

The knife is to be held easily; not grasped forcibly; the edge must be fairly applied; the cuts made uniformly and steadily. In dissecting off the integuments, the parts are to be lifted so as to stretch the cellular membrane, and the edge of the knife should be turned always most to the parts which it is of least consequence to injure. The muscles should be dissected in the direction of their fibres, so as to uncover them fairly and show their course. In such parts as are covered by fasciæ and aponeuroses, these are not to be raised with the integuments, but to be examined subsequently. No more of the integuments is at any time to be removed than is requisite for the present dissection. When the dissection is suspended or relinquished for a time, they should be neatly replaced, as dissected parts when exposed, become either dry and hard or soft and watery.

There are many dissections which may be more successfully performed with the scissors than with the knife, and an early attention to a skilful management of the scissors, will be attended with decided advantage. The dissection of the muscles of the eye, the anatomy under the angle of the jaw and of the muscles of deglutition, can scarcely be shown without them.

We have already remarked that a first dissection ought to be made for the purpose of acquiring general views of the structure and relation of parts. No one should begin an investigation of all the muscles of the body unless it be one who has frequently witnessed the dissections of others, or who is aided by an experienced friend. This investigation of the muscles exclusively, at first is accompanied by many evils. It is dry and difficult, which may create disgust and repugnance to the study. It teaches a habit of viewing the different structures of the system entirely insulated from one another, as it is necessary to destroy all the connections of nerves, blood-

vessels, &c. in order to exhibit the muscles handsomely, or as they are seen delineated in plates.

Of Injecting.

Young subjects are the best for injecting; they are more manageable, and easily heated if wax, tallow or metal is to be used. Their arteries are more dilatable and elastick, less liable to be ruptured, and not surrounded by parts so firm and unyielding as in adults. The arteries of old subjects are frequently rigid and friable, bearing but little pressure without giving way.

If we desire to inject minutely, it is necessary to have the subject thoroughly warmed. By this the vessels are not only dilated, but the injected fluid is prevented from congealing the moment it is thrown into the vessels. It is equally necessary to avoid heating the subject too much, as the arteries are made brittle and unmanageable if the heat be increased so as to scald them.

The subject may be heated either by immersing it in warm water, or by steam, or by heating the vessels themselves. When by warm water, the subject should remain in for a considerable time; from one to three hours may be well, according to the circumstances of size, age and condition. When the vessels themselves are to be heated, equal parts of brown and white spirit varnish moderately heated and of the colour that is to be used in the wax injection, are to be thrown into the vessels. This dilates and warms the vessels so as to prevent the wax from being cooled or retarded.

The ordinary injection is made of

Beeswax	6 oz.
Rosin	8
Turpentine Varnish	6

The colouring matter for arteries is generally vermilion. For veins various colours are used. Kings yellow, flake white, smalt, verditer, verdigrise, and lampblack, may be mixed with the injection, according to the choice of the injector, and in quantity proportioned to the degree of colour desired. The colouring matter is to be first mingled with the turpentine varnish, which gives pliancy to the mass, and then be added to the melted wax. The wax must not be too much heated least the colours be decomposed and spoiled. Nor should the injection

be thrown into the vessels too hot, as the larger arteries may be crisped and the smaller burst, by the expansion of the air or moisture they contain. It is not too much heated if the finger can be held in it for a short time. A coarser injection may be made with tallow, wax, spirit of turpentine, and oil, coloured with coarse paints; or if the parts are not to be preserved, simply with tallow and red lead.

When we wish the wax injection to run very finely, it should be preceded by an injection of painters' size or glue, coloured with vermillion. It has the advantage of being less expensive, fills the vessels more minutely, gives a chance for the most beautiful specimens of minute injection, and may be thrown into the body in great quantity without rupturing the vessels. Thus the vessels are dilated; the limbs warmed and moistened; the wax flows readily, and the size on slight pressure escapes into the cellular texture. In making coarse injections it is necessary to keep the injecting instruments warmed, by which the wax is prevented from cooling, and the air, to a greater or less degree driven out of the cavity of the syringe. Having air or water or a mixture of them in the syringe should be avoided as much as possible; as this frequently occasions an entire failure when all other circumstances promise success.

Minute injections, may be composed of turpentine, coloured with vermilion; fine glue or size, coloured with any of the before mentioned paints; or equal parts of brown and white spirit varnish.

Having our syringe pipes and stop cocks in order, and provided with waxed ligatures, forceps, sponge, &c. and the materials for injection, we proceed to fix the pipe firmly in the vessel whence the fluid is to be thrown through the whole body or part. It is usual to saw the sternum directly in the centre to avoid cutting the mammary arteries. Separating the divided portions, the pericardium is opened and the pipe inserted into the aorta as near to the heart as possible. The student will know the aorta readily, by its size, and by recollecting that the pulmonary artery comes out from the anteriour ventricle of the heart, passing under the arch of the aorta.

Instead of this, I would from my own experience recommend students to fix the pipe in the femoral artery of the right or left side, about half way down the thigh, by making an incision

three hands breadth from the anteriour superiour spinous process of the ilium, and turning up the sartorius muscle. By this many advantages are secured. The instruments are more manageable as they are now to be held in the direction of the limb, and not almost perpendicularly, as when we inject from the aorta. The operator can act with greater steadiness, and if it be necessary to fill the syringe a second time, he can reapply it without difficulty. Add to this, the arch of the aorta is not spoiled by cutting into it, and the true importance of its valves is beautifully shewn. The great veins and the auricles of the heart may be injected on the other side and the ventricles handsomely stuffed so as to preserve the heart in its place. By suddenly driving home the piston of the syringe when the pipe is in the pulmonary artery the injection may be made to return through the pulmonary veins to the left auricle. The artery below the part where the pipe is introduced, may be filled by a second injection, if desired.

When we are to throw in coarse injection, we do it with a smart push of the piston. The fine material is to be pushed slowly and gradually, scarcely pressing at first and adding afterwards to the force. If rupture of the vessels occur when using coarse injection, it is generally of the trunks and not of the smaller branches. This is owing to the temperature of the ingredients being too great, and as the heat is suddenly given off to the main trunk, this is corrugated and injured before the small vessels are affected: the consequence is rupture and extravasation. When minute injection is used, rupture most frequently occurs in the small vessels, as it is in this case owing to the force exerted in throwing in the fluid.

When we desire to exhibit the minute vascularity of joints and membranes and particularly of bones, it is necessary to prevent, in some degree, the passage of the injection into the surrounding cellular substance. The injection will not penetrate the more resisting, as bones and cartilages, while it can flow into the dilatable cellular texture. To prevent the injection from being thus expended, we are to roll the limb in a bandage from the toes to the upper part of it, not very tight but sufficiently so to prevent the enlargement of the cellular substance and muscles by the force of the injection. By this the minute vessels are filled, yet little extravasation allowed;

the resistance being equable, the parts receive the injection in proper quantity.

To inject veins, they must be carefully washed out with warm water and frequently dilated. In most cases they are more or less filled with coagulated blood, especially in old subjects which are in many respects the best, their veins being enlarged and varicose. The coagula must be frequently drawn out of the vessels before introducing the pipe.

Thus, when the veins of the thigh and leg, for instance, are to be injected, a pipe should be fixed in a small vein in the fore part of the foot near the great toe. A stop cock should also be fixed into the external iliack vein within Poupart's ligament. The blood must then be washed out by throwing in tepid water from the tube at the toe. At first the stop cock at the top of the thigh is to be kept open; afterwards, when the veins are cleared, it is to be closed: the veins to be a little distended and the limb immersed in warm water. Before throwing in the wax, the veins must be completely emptied by opening the stop cock and pressing the fluid from the veins. The coarse injection is to be thrown in while the limb is entirely warm, and not to be preceded by fine injection. The stop cock at the groin should be kept open during the injection, and an assistant should close it as soon as the wax begins to appear at the mouth of the vein. In this way the air or water will be totally displaced by the injection and the veins that would otherwise remain empty will be filled. By dilatation the valves lose their power, become too small for the diameter of the vessels and allow the injection to go backwards into the branches.

For the purpose of facilitating the study of anatomy rather than with a view to make preparations for the cabinet, the student will find it more to his advantage to use an injection which requires no heating of the subject or the ingredients. Besides, it may be done with very cheap instruments, as a common pewter or wooden syringe, and the expense of the materials is very trifling.

To make this cold injection it is only necessary to obtain some finely sifted calcined plaster of Paris, which must be kept covered previous to using it so as to prevent it from absorbing moisture. If its own colour be not liked, by tinging

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For the purpose of facilitating the study of anatomy rather than with a view to make preparations for the cabinet, the student will find it more to his advantage to use an injection which requires no heating of the subject or the ingredients. Besides, it may be done with very cheap instruments, as a common pewter or wooden syringe, and the expense of the materials is very trifling.

To make this cold injection it is only necessary to obtain some finely sifted calcined plaster of Paris, which must be kept covered previous to using it so as to prevent it from absorbing moisture. If its own colour be not liked, by tinging

the water with cochineal or other substances previous to mixing the plaster for use, we may accomplish our wish. The plaster should be added to the water and stirred well until it is of the consistence of thin mush or paste and then thrown into the vessels. To the advantages of requiring no heat or extensive colouring matter, may be added this of its not hardening immediately, so that if the syringe will not contain enough to fill the vessels at one stroke, it may be filled repeatedly without danger of the first portion preventing the entrance of a second by its congelation. This injection is somewhat brittle when cold, though not so much so as to constitute an objection to its use. I am inclined to believe that this objection may be entirely removed by adding a portion of glue to the water with which the plaster is to be mixed. The instruments for injecting are to be oiled internally previously to filling them with plaster.

The injections with plaster are quite as minute as the usual injections with wax, and from experience we can recommend it confidently. Who was the first proposer of this method we know not. Any one studying the subject might think of it. At least it was some years after the time that we first determined on using it that it had been tried by others. Another cold injection is made of litharage, boiled linseed oil and turpentine varnish, but is liable to numerous objections.

There is a great waste of colouring matter in the ordinary mode of injection, inasmuch as only two-thirds of the external surface of injected vessels are visible and all the colouring ingredient not on the surface is useless. These colours also render the injection brittle in proportion to their quantity and are moreover, in some instances, very expensive. To obviate these difficulties an experiment was made some years since which fully equalled our expectations: no colouring matter was used in the injection. The wax was thrown into the vessels dissected, and when dried they were coloured with a camel's hair pencil. The vermillion or other colours were mixed with white of egg laid on with great ease and celerity, and when dried the whole was varnished over. Thus all the asperities occasioned by dissection on the coats of the vessels were concealed, and when the varnish was laid on no one could discover that the colour was not thrown in with the wax.

A beautiful metallick injection, which melts as readily as wax and may be thrown into the vessels in the same way, is composed of eight parts of pewter, five of lead, and three of Bismuth. To this one part of mercury may be added. It may be very useful in cases where we are under the necessity of injecting several varieties of vessels in the same subject.

PREPARATIONS, &c.

There are many curious and important appearances in morbid anatomy which cannot be preserved. Colour is often the only criterion by which we can determine the character of the disease, and this we can seldom preserve. Where it is possible we must imitate the appearance by painting as nearly as it can be done. We may in these cases derive much assistance from injection, which will greatly assist in the investigation of parts which would otherwise seem confused and intricate. It may be laid down as a general rule for conducting the investigation of morbid parts, always to throw injection into the vessels where it can be conveniently done.

To preserve fleshy parts in spirits it may be necessary to throw spirits of wine into the vessels. Spirits of wine is one of the best substances for preserving such preparations, although other articles, as spirits of turpentine, pyroligneous acid, &c. may be advantageously used. Spirits of wine must be *diluted* according to the delicacy of the parts to be immersed in it. Sometimes when very delicate fleshy membranes are placed in pure spirits, they will be found next day shrivelled and shrunk at the top of the jar. By saturating the spirits with sugar, they lose this property and the membrane hangs loosely in the jar. The glasses containing such membranous parts, should be allowed to stand some time before being finally closed. The membrane being full of water when first put into the spirits hangs elegantly enough, yet, when it has parted with its superabundance of water and receives the spirit, it becomes so light as to swim on the surface and requires small hooks of glass to be put to its lower part to weigh it down. Wet preparations often require to have the spirits changed upon them several times before they are finally shut up to prevent them from disclosing the fluid. It may be necessary that the parts should be stuffed or held out in particular postures till they be so hardened that they will remain unsupported in the jar.

For this purpose diluted muriatick acid combined with nitrick acid is used, or diluted nitrick acid only, or a solution of alum and common salt. Care should be previously taken to macerate the parts well, and to free them entirely of blood.

When we inject delicate membranes with quick silver or fine size, instead of tying all the vessels by which the fluid may escape, it will be sufficient to sear the edges of the membrane with a heated iron, or as is customary after having fixed the tubes, drying the edges all round while the middle part is kept soft and moist. When the vascularity of a part is to be shown where there is no opportunity of injecting it, the blood may be detained in the vessels by quickly drying and varnishing it. When the blood is extravasated and collected preternaturally in the vessels, as in piles, it may be coagulated by distilled vinegar or pyroligneous acid. In other instances, as in the lacteals, their natural fluids may be coagulated and preserved by plunging them in strong spirits.

Many delicate and interesting parts of the body cannot be kept for any time in their original beauty, viz. the organs of sense, minute nervous parts, the villi of intestines, incubated egg, &c. There is much skill and neatness requisite in making such demonstrations, as the minute structure of many parts must be dissected and unravelled under water, where the loose and floating membranes display themselves, which out of water would be collapsed and indistinct. A strong and quite transparent jelly has been found very serviceable in such investigations, the delicate parts being dissected (say the coats of the eye) and placed in the jelly, when it is becoming firm the parts will be held out and elegantly displayed.

In dissections of the ear, freezing mixtures have been advantageously employed, which allow the frozen parts to be dissected without the escape of the fluids.

Corroded preparations, when well made, are the most elegant of anatomical preparations, though they require more care and delicacy in handling than any of the others. They are generally made of the solid viscera, the heart, lungs, spleen, kidney, &c. The injection for this purpose should be as hard as possible and no minute injection should be previously thrown in. If the injection be successful, the preparation is to be placed in the position in which it is intended to remain, while the injec-

tion is still warm and the corroding acid is to be applied. In order to apply this to the most advantage I would recommend that the preparation be placed in a vessel having an opening in the bottom. When the acid has remained on the preparation a day or two, by removing the stopper of the opening, the acid may be gently drawn off without mixing with the fleshy substance. Water may then be poured on in greater or less quantity according to circumstances, and the corroded parts washed away. By reapplying the acid and washing in a similar manner, in a few days the article will be sufficiently corroded. It should then be placed on a suitable pedestal and be secured by a glass case.

The acids generally used for the purpose of corroding, are the muriatick and the nitrick. The nitrick seems the better of the two. Neither are so efficient as the two conjoined in the form of the aquia regia, as we have seen very clearly proved by the experiments of Dr. E. Dorsey of Maryland.

After having succeeded in injecting bones, it is necessary that they be rendered transparent in order that their vascularity be shewn to advantage. There is some difficulty in cutting the cartilages to show the progress of ossification, as well as in exposing their texture independent of vascularity, as by burning, erosion and maceration. The youngest subject is the best for shewing the vascularity of bones. By this we are not to understand that the vessels of bones are more numerous at their formation, than at their full growth. The bony structure is always undergoing changes from absorption and therefore must be largely supplied with secreting vessels to replace and preserve the materials of which they are composed. Otherwise they could never be repaired when broken or injured, and their absorption would be marked by a total decay. In extreme old age the vessels are not so active as in youth, but must still continue their office, otherwise the bony system must soon fall into ruin.

After injecting a bone we macerate it in acid, in order to shew its vascularity. The acid dissolves the earthy matter of the bone, leaving the cartilaginous and fibrous structure uninjured. In this state, the form only, of the bone is left, and the vascularity of the structure is apparent; not however until the bone has been thoroughly dried and plunged into spirits of

turpentine. As soon as the spirit penetrates the cells of the bone, it becomes quite transparent, and the vessels are seen branching through its substance.

In corroding shells to show the glutinous basis which holds their earthy parts, spirit of wine with a little acid dropt into it is used, by which the delicate web is preserved while the earthy part is washed away. It may be necessary to add spirit of wine to the menstrum, to prevent the size in the vessels being washed away, when the maceration of a bone is expected to be tedious.

The most beautiful preparation of a bone, is a simple section of the cartilage or apophysis, in young subjects, where the injection has run minutely, and while the nucleus of the bone is still small and red with injection. This nucleus is seen lying in the middle of the cartilage, with the vessels crowding from the surface towards the centre, and terminating in the bone; or perhaps only a small and delicate artery is seen pushing into the central cartilage and terminating in a point. The cartilages in this state when cut into thin slices and suspended in spirit of wine or turpentine by horse hairs, are beautiful; or when those slices are dried and suspended in spirit of turpentine, the cartilage becomes so transparent that it is with difficulty discerned in the fluid, and nothing is seen but the nucleus of bone, and the arteries beautifully ramifying to supply it with blood. The nucleus may be tinged by solutions of some of the metals in acid, while the cartilage will remain perfectly white. The preparations of this kind may be infinitely varied, and show not only the beautiful changes going on in the bones, but also in the whole body. In the museum of the University of Pennsylvania may be seen a most splendid collection of examples shewing the vascularity of bones, made with that elegance and skill which characterise the preparations of Dr. Horner.

The marrow of bones may be displayed after injection, by Macerating in water, or by splitting cylindrical bones and preserving them in spirits of wine. When such a section of bone is dried and put in oil of turpentine, the vessels supplying the marrow bags being collapsed to the sides of the bone, are seen in great numbers.

The structure of bone may also be demonstrated by maceration and burning. The bone equally supported is to be exposed to a red heat until the animal part is destroyed; the

figure of the bone still remaining though deprived of the matter to which it owes its strength. This is the opposite of the result obtained from maceration in acid. In this case the earthy matter is removed, leaving the animal in the form of the bone. Preparations made in both ways should be contrasted together.

When a bone is burnt and then put in acid, it is entirely destroyed. Therefore, if, after burning a bone completely, warm wax be poured into its cavity and it then be corroded in acid, its cells will be elegantly cast in wax.

Boiling and maceration may be employed to show the muscularity of some parts, as of the heart, uterus, &c. The muscular fibres of the bladder may be demonstrated by distending it and immersing it suddenly in boiling water. In like manner the coats of an artery, the rete mucosum of the skin, &c. may be shown. Immersing the skin in boiling water before injection, is said to make the villi stand out more from the surface. Maceration in cold and warm water alternately, may be employed to separate the lamina of membranes, or the part may be macerated until putrefaction takes place and then plunged into boiling water.

The muscularity of membranous parts may be made evident by boiling gently with a solution of nitre and alum: this makes the muscular fibre of a red colour. Injecting the parts minutely seems to be the most proper and effectual mode, as the muscular fibre being very vascular will be highly coloured by a minute injection. Vinegar poured on nervous membranes, as the expanded nerves of the eye and ear, septa of the vitreous humour and membranes of the egg, renders them opaque and visible: the last are not discoverable without this help. The brain and nerves may be rendered firm by oxyginated muriatick acid or by a solution of corrosive sublimate.

Where dissections are to be made in the summer season or in a warm climate, the subject may be preserved for a long time by injecting the vessels with a saturated solution of nitre or of common salt. Better than either of these would be an injection of pyroligneous acid diluted with one third or one half its weight of water. Simply wetting the surface of a subject with this acid has a wonderful effect in preserving it for a long time.

To inject the lymphatick vessels we commence at their extremities and force quicksilver through them by the pressure of a column of this metal. It is hardly probable that any person will attempt this branch of anatomical investigation without an assistant who has had experience. A few practical examinations will do more for him in this case than a volume of precepts.

The student should never neglect, during his dissections, to accustom himself to the performance of various surgical operations in which dexterity is very desirable. The introduction of tubes into the different passages and ducts, &c.; taking up arteries, and the separation of the veins and nerves which accompany them, may be of great importance to his future reputation. When he procures a subject for operations expressly, he should introduce a tube into the aorta which should communicate with a reservoir raised above it containing water coloured with cochineal. The pressure of the fluid will force it through the vessels, and when a vessel is divided the dissector will be obliged to take it up as in real operation. He will derive great advantage from this as he will be taught caution in operating, become accustomed to the sudden jet of blood which sometimes disconcerts young operators, and acquire practical skill in securing the vessels.

First Dissection.

Having the subject prepared by cleaning its surface with soap and water, and being provided with the necessary instruments—knives, forceps, scissors, tenaculum and double hooks, we may proceed to the first investigation.

The first incision is to be made through the skin from the lower end of the sternum to the pubis, if the subject be a male; if a female, the incision is to extend half way between the umbilicus and os pubis, and from the end of this cut another is to be made extending to the anteriour superiour spinous process of the ilium on both sides. The triangular flap below is to be reflected over the organs of generation. The integuments are now to be dissected off on one side as far back as the transverse processes of the loins and sufficiently to expose the crest of the ilium. After laying back the skin we shall have a more or less distinct view of the abdominal muscles covered by some cellular substance and a thin fascia which is

the fascia superficialis. This covers the external surface of the muscles and their tendons, and may be traced up over the chest and down on the top of the thigh.

As the superficial fascia is thin and unimportant above, we generally investigate the lower portion most particularly, because of its connection with hernia. By cutting lightly across from below the umbilicus to the spine of the ilium and making another incision to the pubis, we may raise the superficial fascia. We should dissect it off till we have raised it from Poupart's ligament and the spermatick cord. We shall find a process of it extending into the scrotum, which is called the process of Camper. The fascia superficialis may be traced down on the anterior surface of the thigh, covering the inguinal arch. This fascia forms the coat of the hernial sack in inguinal and femoral hernia, and is that which presents immediately beneath the integuments.

Having obtained this view of the superficial fascia, we next carefully remove all the cellular substance from the muscles of the abdomen, dissecting always in the direction of the fibres. Clearing off the cellular substance from the origin of the external oblique muscle, we perceive how beautifully it arises from the eight lower ribs; how it is digitated or has fleshy fingers or serræ which lie between similar origins of the great serratus anticus, running up to the scapula; the course of the fibres is to be noted, running obliquely downwards and terminating in a broad tendon which spreads over the anteriour part of the belly, meeting its fellow in the centre; passing also downwards to be inserted into the ligament of Poupart, the tuberosity and the symphysis of the pubis; the tendon splitting in such a manner near the pubis as to give passage to the spermatick cord in males or the round ligament in females.

Further, we are to observe a white line somewhat curved which is seen at the part where the external oblique grows tendinous, called linea semi-lunaris, in which surgeons formerly tapped for dropsy; and the central white line extending from the sternum to the pubis, called linea alba: then remark the manner in which the tendon of the oblique splits near the pubis to allow the cord to pass through. These portions of the tendon are called pillars of the abdominal ring. That which is next the linea alba is inserted into the bump of the

pubis; the external pillar passes under the cord towards the centre of the pubis and is inserted into the symphysis. Thus it crosses the insertion of the internal pillar. Where the tendons split, above the cord, we are also to remark the cross bands of tendon which are so arranged as to strengthen the ring at its upper part.

Raising the digitations of the abdominal muscles from the lower ribs, we pursue the dissection down to the loins. The subject ought to be turned on one side, and the edge of a muscle which will be found lying over the origin of the abdominal, must be turned back without injury. This will afterwards prove to be the latissimus dorsi, the widest muscle of the back. Dissect the oblique and reflect it until you arrive at the semilunar line, where you cannot proceed without spoiling the tendons of the subjacent muscles. In order to understand the manner in which tendons are here united, make an incision at a short distance from and in the direction of the linea alba nearly down to the pubis, and reflect the tendon towards the semilunar line. When removing it from the depressions which cross this muscle in several places, the edge must be turned the other way or the tendon will be spoiled. You will observe the tendon to be pierced in several places: through these holes the vessels and nerves pass to to the surface. This reflected sheet of tendon forming the external part of the sheath of the rectus abdominis, is composed of the tendon of the external or descending oblique and the anteriour layer of the internal or ascending oblique.

The cellular substance is next to be neatly removed from the surface of the internal ascending oblique. The fleshy fibres of this muscle will be found arising from the crest of the ilium as far back as the spine, mingling there with the muscular substance belonging to the back; its posteriour fibres ascending to the lower ribs; its anteriour passing across the abdomen, while the middle fibres ascending obliquely upwards are inserted into the ribs, and reaching to the ensiform cartilage. About the tenth rib it ceases to be fleshy. The posteriour layer of the tendon divides from the anteriour and passes behind the rectus abdominis, forming with the tendon of the transversalis the posteriour part of the sheath of the rectus. The lower part of this muscle which rises from the anteriour part of the

ilium runs directly downwards in the course of the external oblique and sends off behind the external ring a delicate fasciculus of fibres which surrounds the spermatick vessels and is the origin of the Cremaster muscle for suspending aud compressing the testicle.

Before the internal oblique is raised from the transversalis it will be well to remark the manner in which its lower edge lies over the edge of the transversalis, as well as the course of the cord which passes under them both, not through any part of their substance.

Having dissected up the internal ascending oblique muscle, you have an opportunity of examining the transversalis, which you will see arising fleshy from six of the lower ribs on their inside, whence some have described its digitations with the diaphragm. It arises also tendinous from the mass of the muscles of the loins. It runs a little round towards the side where the strongest part of the muscle is formed. It arises from the spine of the ilium and also from the outer part of Poupart's ligament. Its insertion is into the linea alba, having previously connected itself with the linea semilunaris. Towards the lower part of the belly this muscle seems deficient and the bowels appear through the fascia transversalis and the peritoneum, the external surface of which is covered with much confused cellular substance entirely different from its internal which is very smooth and is applied to the intestines.

It is evident from the manner in which the oblique and transverse muscles stretch across from the spine of the ilium to the linea alba, that there must be a vacancy at their lower part between the edges of these muscles and the ligament of Poupart. This is occupied by a fascia lining the under surface of the transversalis muscle and hence named fascia transversalis. It is this same fascia which is reflected over the exteriour surface of the muscles contained in the pelvis, where it is called fascia iliaca; over the inferiour surface of the prostrate gland, where it is called fascia prostrata; and is described also as passing out of the crural arch to enwrap the upper part of the vessels lying under Poupart's ligament. In short, it is the different portions of this same fascia concerning which so much has been said and to so little purpose—with great additions of technical jargon and with very trifling increase of knowledge.

The difficulties of understanding it thoroughly have been so much multiplied that a student of anatomy may be scarcely able to believe that it is a plain and simple piece of anatomy; perfectly easy to be understood and demonstrated, when treating the common description of it with neglect, he employs his sight and his knife with care and judgment.

Through this fascia transversalis the spermatick cord enters the abdomen about two inches from the external ring. Its course from the external to the internal ring is obliquely upwards and outwards in a line with the anteriour superiour process of the ilium, passing under the edge of the transversalis muscle. At this point the strangulation often takes place in hernia.

ARTICLE VI.

PRACTICE OF MEDICINE.

Observations on the good effects of Oil of Turpentine in Puerperal Fever. By Henry Payne, M. D. Nottingham.

(From the Edinburgh Medical and Surgical Journal, No. 73, p. 538.)

Dr. Campbell, in his Observations on the disease usually termed Puerperal Fever, published in the Edinburgh Medical and Surgical Journal for April, 1822, says, "that it becomes the duty of every practitioner, who may have been at all successful in treating it, to communicate the results of his practice to the profession." It is in compliance with this maxim, that I feel myself called upon to state the result of the experience I have had in the management of this disease, which has been attended formerly with so much fatality. Indeed the puerperal fever has, within the last fifteen years, raged with its usual violence in many parts of this kingdom, and particularly in the West Riding of Yorkshire, when but very few of those attacked by it escaped. Before the publication of Dr. Brennan appeared, recommending the oil of turpentine in puerperal fever, I well recollect that the practice of blood-letting was usually had recourse to; but, as far as my own observation went, there was certainly less success attending it than appears to have followed the application of the same remedy in the

cases detailed by Dr. Campbell. After reading Dr. Brennan's work, I was glad to try a fresh remedy for puerperal fever, because I had seen so little good result from venesection, by which, although it was, in the practice I had an opportunity of observing, used early in the disease and carried to as great an extent as was practised by Dr. Campbell in the cases he has favoured the profession with, not more, to the best of my recollection, than one patient was saved, who appeared to get well, as the old saying is, "in spite of the Doctor." It is now nearly eight years since I was called to visit a female who laboured under this disease, when the surgeon, who had only seen the patient a short time before, (she having been attended in labour by a midwife,) proposed the exhibition of the *oleum terebinthinæ*, which was assented to, and it was given in doses of half an ounce every two hours. The effect was a very copious discharge from the bowels, appearing to consist of serous fluid tinged with green, in which were seen floating numerous pieces of white matter like coagulable lymph. Soon afterwards the patient became maniacal and continued so for several days, when her intellects were restored and she gradually recovered. Since that period I have seen many cases of puerperal fever, one of which had been attended some days by a surgeon who had discontinued his visits. I believe she was not bled. The friends of this patient, seeing that I had an unfavourable opinion of the case, called in a more experienced physician, and it was agreed to try the turpentine as a last resource. Two drachms of it were prescribed every two hours, which soon brought on a purging of a matter of the like nature as before mentioned. I stated that in one case mania had taken place after the exhibition of the turpentine, which was probably given in too large doses, thereby producing a determination to the head. Two drachms were therefore agreed to be given, and the physician in attendance with me, a gentleman of long experience and in great practice, I well recollect, said that it was an unfortunate circumstance that the turpentine had not sooner been thought of, for if it had, great numbers of females might have been saved.

Although this patient was in *articulo mortis* at the time of the exhibition of the turpentine, she recovered very quickly; and the same success has attended the treatment with turpentine of

every case of puerperal fever that has within the last seven or eight years fallen under my care. It appears to be somewhat extraordinary, that no mention of the turpentine is made in Dr. Campbell's cases. I think I can venture to assure that gentleman, that if he will try this remedy fairly, no matter whether it be early or late in the disease, his practice will be accompanied with more success, and that instead of losing four patients out of fifteen, he will find they will all recover. I am anxious that the experience I have had in the treatment of puerperal fever with turpentine should be made known, because I tremble for the consequences that are likely to happen from the use of the lancet, so strongly urged by Dr. Campbell. I agree with that physician, that the disease in question is of an inflammatory nature; but do not think with him, that women in childbed are able to support the loss of blood better than on any other occasion. I believe they are then less able to bear it; and my experience teaches me to believe, that bleeding is not at all necessary in the disease called puerperal fever, however severely the system may be excited by it. Whether early or late in the disease, the turpentine, when properly administered, avoiding at the same time every thing that is likely to prove irritating, will effectually remove every symptom of the complaint, which it appears to do, by augmenting the secretions into the intestines, to an extent proportionate to the amount of the inflammation, whether affecting the uterus and its appendages or the peritoneum. The bowels are as quickly and as powerfully excited to action by the turpentine as the vessels which open into them; and the profuse discharge that takes place does certainly, according to the experience I have had in puerperal fever, more quickly and effectually relieve the patient of her sufferings than either bleeding or any other remedy.—If the turpentine, as it appears to do, caused a vast secretion of fluid and lymph into the bowels, is it not by this operation likely to relieve the inflamed vessels of the neighbouring parts of great part of their contents; and will they not therefore be as efficiently emptied as if local bleeding had been applied? The immense discharge from the bowels, by the use of the turpentine, never occasions those secondary symptoms that I have seen follow the extensive use of the lancet, which are even more to be dreaded than the disease itself; one of which is a

sort of agitation of the vascular system, such as I cannot describe, during the continuance of which, I am of opinion, those effusions take place into the cavity of the abdomen, which are almost invariably followed by death. The enlarged state of the abdominal nerves, as observed by Dr. Campbell in his dissections, is an important discovery, and proves that that part at least of the nervous system had been greatly excited; and, notwithstanding "the superabundance of blood that may be circulating in the system after parturition," this discovery will teach me to prefer the turpentine in puerperal fever to bleeding,—a remedy which, there is much reason to fear, will aggravate that affection of the nerves, that gives rise to symptoms which it is out of our power to control.

Nottingham, July 16, 1822.

ARTICLE VII.

SURGERY.

Reflections on the Treatment of Fractures of the Lower Extremity, and a Description of a New Apparatus; with Cases. By J. Amesbury, Member of the Royal College of Surgeons in London, &c. &c.

From the Quarterly Journal of Foreign Med. and Surg. for July, 1822.

[The first part of this paper consists of general and particular reflections on the various kinds of apparatus, now in use, for the treatment of Fractures of the lower extremities; with objections, which we must confess are but too well founded, to their competency. Our limits do not permit us to republish the whole, and we have inserted the latter part, in which the author describes the machinery which he has invented. On its advantages, in comparison with previous contrivances for effecting the same object, we shall offer no opinion.]

In the construction of any machine for fractures of the lower extremity, the following indications should be borne in mind:

1. It should fix the whole limb, so as to admit of no motion whose centre is not in the hip-joint, or between the pelvis and the back. 2. It should maintain the fractured ends in a natural position, and in perfect coaptation. 3. It should lie upon the limb with ease to the patient. 4. It should enable the surgeon to place the limb at any angle the case may require. 5. It should allow of the application of extension and counter-extension, when the limb is in the bent position. 6. It should be entirely passive to the motions of the limb, and should allow

the patient to place it in any position most congenial to his feelings, either on the heel or on the side, and to alter this position at pleasure. 7. It should enable the attendants to move the patient from place to place, without any danger of displacing the fractured ends. 8. It should allow of being adapted to limbs of different lengths and different sizes. 9. It should be applicable to fractures in any part of the limb, and of all kinds, whether simple, comminuted, or compound. 10. It should be simple and easy of application. 11. With all these advantages, it should ensure to the patient a speedy recovery and a straight and perfect limb.

To answer these purposes I have made use of the following contrivance: To fix the limb, and to allow it to be bent and fixed at different angles, a piece of beech slightly hollowed out to receive the back of the thigh, thrown a little out of a straight line to answer to the natural curvature of the thigh bone, and gradually narrowed towards the lower end, was connected by means of a hinge-joint to another piece of beech slightly excavated to receive the calf of the leg, and gradually narrowed towards the lower extremity to answer to the natural form of the limb. From the situation for the calf to the inferior end, this piece was made a little concave, simply to prevent the pad upon which the limb is placed from shifting its situation. Both of these pieces were cut out of 1¼ inch board, and that for the thigh was left one inch thick for two inches from its lower end, for the purpose of receiving on each side a brass-eyed screw; and that for the leg one inch thick, and the same width for six inches from its lower end. A bit of beech, a little longer and wider than the foot, was cut out at one end to receive the leg-piece at right angles. This was intended for a foot-board. It was one inch long and one broad where it lay upon the side of the leg-board; and as they lay at right angles, the receiving end of the foot-board and the received part of the leg-piece were bored transversely, so that they may be fastened together by means of a bit of wire. That part of the foot-board which lay upon the concave part of the beech intended for the leg, was a little rounded off at the edge nearest its lower end, so as to give it a hinge-like motion in a direction from right angles over the lower end of the leg-piece.

To fix the pieces of beech intended to support the leg and

thigh, and to allow of their being placed at different angles, I had a thin rod of steel, connected at one end by means of a hinge-joint to a short pillar of brass, fixed by screws to the middle of the back part of the leg portion. To the other end of this rod was fixed, by a hinge-joint, a brass foot about an inch and a half long and one-fourth thick, with a hole in its centre, a little narrower in the transverse than in the longitudinal direction; and another hole in its side, which traversed the one in the centre transversely. To the side of the brass foot was fixed a bit of brass, with a spring in the form of a flute key, and at that end of the key which answers to the part that stops the hole in a flute, was fixed a steel pin, which was made to pass into the hole in the side of the brass foot and cross the hole in its centre. A narrow piece of brass, with five stays projecting from its surface, was fixed to the back of the thigh portion. Each of these stays was of the form and size of the hole in the centre of the brass foot connected to the steel rod, and each had a hole transversely to the plate upon which they were arranged, large enough to admit the pin made to traverse the hole in the side of the brass foot. They were placed at a distance sufficient to allow the thigh-piece to be fixed to that intended for the leg, either straight or at right angles.

It will be seen, that by pressing the key, the pin attached to it, as above described, would be drawn out of the hole in the centre of the brass foot-piece, which could then be made to receive any one of the stays on the back of the thigh-piece, and, once received, we have only to take the finger from the key, and the steel pin is forced, by the reaction of the spring, through the hole in the centre of the stay, and, consequently, the two pieces of beech may be fixed at any angle the case may indicate.

To prevent the effect of moisture upon the steel rod, it is advisable to have it coated with brass or tin, which may be easily done; but this is not required except for hospital practice.

But it is proper that the instrument should be applicable to limbs of different lengths. The thigh and leg-pieces must allow of being shortened more or less according to the length of the limb. To answer this purpose, as far as the leg-piece is concerned, a number of holes of one size should be bored in a line transversely to the lower end of the leg-piece, and

then we have only to draw out the wire which fixes the foot-board to that intended for the leg, slide up the former upon the latter, and fix them where we please.

The length of the thigh portion, however, is not so easily altered; but this may be done by a thin plate of brass the width of the thigh-piece and five or six inches long, according to the size of the instrument. When hammered out to lie upon the hollow part of the thigh-piece, and turned off at its upper end, this plate had attached to it two thin plates or bars of steel, of its own length, and about half an inch wide. As much of one end of each of the steel plates as was equal to the thickness of the wood of the thigh-piece, was bent at right angles. They were then placed upon the back of the brass plate in the longitudinal direction, and the bent extremities united to it just below its upper end, and within half an inch of its sides. Having now placed the brass plate upon the wood, and the steel plates or bars behind it, I had nothing to do but unite the one to the other, through two long mortises in the wood, in such a manner as would enable me to slide the brass plate up and down, or fix it upon the wood at pleasure. To answer this purpose, two male screws were fixed to the lower end of the brass opposite the steel plates, and made to pass through the mortises in the wood, and two corresponding mortises in the steel plates, upon which they were fixed by female thumb-screws. By means of the female thumb-screws the brass plate could be fixed or made to slide upon the wood, so as to enable us to lengthen or shorten the instrument according to the length of the femur; but this is not at all required except for fractures of the thigh.

But legs are of different thicknesses as well as of different lengths: one man may have a larger calf or a longer heel than another, and these should engage our attention. To enable us to adapt the same instrument to different degrees of thickness in the calf or length in the heel, we may make use of a leather shoe, open from the toe, with a wooden sole, suspended from the top of the foot-board by means of a strap and buckle. The strap should be fastened to the bottom of the wooden sole in a groove, and made to pass over the top of the foot-board, which should be furnished with a buckle near the end that comes in contact with the leg-piece, in order to receive it. The strap

should be let a little into the top of the foot-board, that it may not shift its situation. The sole of the shoe should be confined closely to the foot-board by a strap and buckle passed round them. The same intention may be answered by making the sole of the shoe to slide in a groove in the foot-band, upon which it may be fastened by means of a thumb-screw. The leather of the shoe is intended to wrap over the instep and to be confined upon it with straps or ribbons.

This shoe is intended to answer three indications: to raise the heel from the leg-piece, or lower it, as the case may indicate; to prevent any lateral or rotatory motion between the fractured ends of the bones; and to form an easy bed for the heel.

The whole of what I have described is necessary for fractures of the thigh; but for fractures of the leg the brass plate may be dispensed with.

Besides the parts I have mentioned, three common short thigh splints are required for fractures of the thigh; one on the outer, another on the front, and another on the inner side of the thigh. The first should extend from the upper part of the great trochanter to the lower part of the outer condyle; the second from the great trochanter to the patella; the third should lie upon the triceps adductor femoris, and should extend from the pelvis to the lower part of the inner condyle. These, with the assistance of the thigh-piece, may be made gently and regularly to compress the muscles and prevent any straps or tapes made use of to secure them from injuring the soft parts. The one placed upon the front of the limb answers another indication, that is, to resist the action of the flexors of the thigh.

For fractures of the leg, three short splints are also required; one on the outer, another on the inner side of the leg, running from the head of the tibia, or the condyles of the femur, to the sole of the foot. These differ but little from the common short splints for fractures of the leg. Each of them has a small hole at the lower extremity, which corresponds with one on the same side of the footboard. They are a little narrower, and the holes for the ankles are made to answer to the situation of the malleoli, the one for the inner ankle being nearer the anteriour edge of the splint than that for the outer.

These splints steady the foot more perfectly, and enable the

the patient to lay the limb upon the side. The third splint, which is composed of half beech and half thin slips of deal, *turned up a little at either end, is intended to lie upon the front* of the leg. This prevents the upper fragment of the fracture from being at all displaced by pressure on the calf, and preserves the integuments on the shin from the action of straps or tapes.

I have used the instrument above described in a variety of cases, and have not been able to discover any thing material that militates against it. In confining the different splints upon the limb, I have made use of leather straps armed with buckles, in preference to tapes, as the necessary degree of pressure can be better and more easily regulated with the former than the latter, and as there is no danger of their giving way. In order to fix them to the instrument or remove them at pleasure, I have usually had some studs put along the middle of the back of the instrument, and a strip of leather near each side, for the straps to pass under.

Having described the different parts of this instrument, we now pass on to its application. This is modified by the state of the soft parts and the situation of the fracture. The surgeon should bear in mind the principles of his science, and act up to *them in every instance. If no particular angle is indicated by* the nature of the case, the semiflexed position is the most easy for the patient, both in fractures of the leg and fractures of the thigh. Whether the fracture be in the leg or in the thigh, the limb should be placed upon the instrument as soon as possible after the accident, and this is the more necessary in proportion as the displacement is great or inflammation high; but as long as the irritation continues it is not advisable to apply the short splints upon the fractured bone.

In a case of fractured leg, *before the irritation has subsided* sufficiently for the application of the short splints, the limb *should be put up in the following manner:—The surgeon,* having procured an instrument, should fit it to the sound limb. The hinge which connects the leg and thigh-pieces should be *placed immediately under the knee joint, and the foot-board* brought up close to the foot. He should then superintend the *construction of a pad, made thickest at the part which is in-* tended to lie under the small of the leg, and long enough to

cover the leg and thigh-pieces, upon which the limb is to be placed. A tape should be placed transversely upon the back of the foot-board near its loose end, under a strip of leather, placed there to prevent the tape from slipping down to the end of the leg-piece. The ends of this tape should then be carried from the sides of the foot-board, through the corresponding brass eyes connected to the sides of the thigh-piece, and left hanging. The instrument being now properly adjusted, two assistants should raise the fractured limb, one the foot, and the other the upper fragment, while the surgeon places the instrument, properly padded, beneath it. The instrument being in a line with the limb, and the hinge under the knee, the assistants should be directed to lower the limb gradually upon it, and place the heel in the shoe. Then, having placed a splint upon the top of the thigh, and another on the inner side upon the triceps, two or three straps should be carried round the thigh, upon the splints, so as to make very little pressure upon the limb. One of the straps, drawn rather closer than the others, should pass over the condyles of the femur, to keep the knee from rising from the instrument when the limb is moved. The only use of the short splints placed upon the thigh in fractures of the leg, is to prevent the straps that fix the thigh upon the instrument from injuring the soft parts. The tape made to cross the loose end of the foot-board, should now be drawn as tight as is comfortable to the patient, and tied upon its back. The tape is intended to keep the foot-board close against the sole of the foot, which should be left extended a little beyond a right angle with the leg. The leather of the shoe should now be laid over the instep and toes, and secured as close as the patient can bear it with ease. The limb being thus put up, the foot of the instrument should be raised, and the patient left upon his back, with the limb upon the heel. In this state leeches, cold lotions, &c. may be applied; the patient's bowels may be freely evacuated; he may have his bed made daily, &c. without any danger of disturbing the fracture, if care be taken not to turn the instrument to either side. As soon as the irritation is sufficiently got under, the short splints should be applied to the leg, and confined moderately close with two or three circular straps, taking care that the beech of the front one is placed upon the tibia. A tape should now be passed through

the small hole in the lower end of each of the side-splints, and through the corresponding hole in the foot board. These tapes should then be brought together on the back of the foot-board, and tied. The straps upon the thigh having been drawn a little closer, the patient may be furnished with a sling, which should be fixed so as to act upon the heel of the foot-board and lower end of the leg-piece, and desired to get up and place his limb across a chair, or walk about at pleasure on crutches, with a caution not to move the limb but by means of the sling. The sling should not be taken off the instrument night nor day, during the period of cure, as it gives the patient perfect command over the lower part of the limb, and enables him to place it in any position he pleases.

For fractures of the thigh it is proper to make use of the apparatus for lengthening the thigh-piece, unless the instrument be made to the measure of the limb.

The instrument, with this apparatus attached to it, should be placed under the sound limb, and fitted to the leg and foot, as for fractures of the leg, and the thigh-piece should be regulated so as to reach from the bend of the knee to within half an inch of the tuberosity of the ischium. The pad should be made a little longer than the instrument, that it may fall a little over its upper end, and be thick enough at this part, when compressed, to fill up the space left between the end of the instrument and the tuberosity of the ischium. The surgeon should superintend the making of this pad; for it is of importance in two respects. If the thigh-part of the instrument be nicely adapted to the length of the thigh, it will tend to keep the broken bone of the same length as the sound one, by its pressure against the tuberosity of the ischium and upper part of the back of the leg; and if its upper end be sufficiently protected, it will not inconvenience the patient by its pressure on the soft parts.

When there is much contusion or inflammation of the soft parts, the instrument, properly adjusted to the length of the sound limb, should be applied in the following manner:—Two assistants should raise the limb from the bed while the surgeon places the instrument beneath it. The limb being placed upon the instrument, the foot-board should be properly fixed with tape, and the foot secured in the shoe, as described for fractures of the leg. A strap or two should then be passed round the

leg upon the instrument, and a bit of splint padded and placed upon the shin. The leg and foot being thus secured, and a long broad strap with a sliding pad attached to it being previously carried between the steel bars and the brass plates, one assistant should keep the upper end of the instrument close against the back of the thigh, while the other, by extending from the knee, draws down the instrument, and with it the lower fragment, till the upper end of the instrument comes anteriour to the tuberosity of the ischium, in the same manner as when it was placed on the sound limb. The surgeon having ascertained this point, and that the bones are in apt and proper contact, the broad strap placed at the upper end of the instrument should now be made to cross upon the front of the thigh, pass round the pelvis and buckle.

This strap keeps up the instrument against the back of the thigh and serves to connect it with the pelvis, and therefore the instrument and lower part of the limb are made to follow those motions of the pelvis which tend to disturb the fracture.

The whole length of the thigh is left bare, and little or no impediment is given to the circulation. The limb thus secured should be left resting on the heel, with the patient on his back.

As soon as the high action is sufficiently got under, which is usually in the course of two or three days, the short splints, properly padded, should be placed upon the limb and secured with three or four straps. The broad padded strap previously passed round the thigh and the pelvis, should now be carried under the leathers or tapes usually placed upon the back of the short splints, made to cross upon the outer of these splints, and again pass round the pelvis and buckle. This strap keeps the upper ends of all the splints close upon the upper fragment and serves to connect them with the pelvis.

If the broken ends of the bone do not ride, and if the fracture be not so high up as to prevent the upper fragment from being held firmly by the splints, the patient may now be allowed to place his limb upon the side or upon the heel and alter the position at pleasure,—not by means of a sling, however, as in fractures of the leg, but by placing his finger under one of the straps surrounding the lower end of the thigh, and, at the same time, taking care that the pelvis and the limb move together in the same direction.

During the cure it is necessary that the surgeon should attend to two points particularly. He must see that the instrument does not ride over the tuberosity of the ischium. He must take care that the patient does not move the limb by the exertion of its own muscles, but by the assistance of his hand. The reason of these two directions will immediately appear. The riding of the instrument would indicate that the fractured ends of the bone overlap; and if the patient attempt to move the limb by its own powers, he would incur the danger of displacing the upper fragments; for the muscles surrounding the fracture are not of a texture capable of opposing much resistance to the lateral displacement which their own contraction would tend materially to produce.

If further extension and counter-extension be necessary, which I am disposed to believe will seldom be the case, the patient should be placed on his back diagonally upon the bed. Extension may be then made by a tape, which should be fastened to the brass eyes on the sides of the thigh-piece, thrown over a pulley at the foot of the bedstead, and made to suspend a weight sufficient for the purpose for which it was intended. The tape, before it passes over the pulley, should take the line of the thigh-part of the instrument at whatever angle it may be placed and whether it lies upon the heel or upon the side. It will therefore be necessary for the pulley to be suspended from the ceiling, the foot of the bedstead, a forked stick, or any other means suited for the purpose. If the stick be used, it should have a number of holes bored through it transversely, and should be cut down the centre to receive the pulley, which may then be fixed at any height by a wire passed through it and the corresponding holes in the stick.

For fractures of the leg, the instrument applied in the manner above described answers every indication for which it was constructed; and it has been found successful in every case of fracture of the leg and thigh for which it has been used.

Having described the instrument, and the different modes of applying it in simple fractures of the leg and thigh, which vary according to the situation and state of the injury, I need only subjoin a few cases, to show its superiority over the means in common use, as to the comforts of the patient and the rapidity with which he obtains a perfect cure.

I was favoured by Mr. Travers with the treatment of the following case of fracture of the thigh:—

Case 1.—Thomas Barwick, æt. twenty-six, was placed under my care, December 17th, 1821, for a simple fracture of the thigh, across the middle. The injury was occasioned by the wheel of a cart which passed over the limb. Considerable contusion and tension followed the accident, but the muscles were tranquil and the fractured ends of the bone did not appear to ride.

I saw him the fourth day from the time of the accident, and applied the machine. He had his bed made directly after, and had it repeated during the cure as often as he wished; and placed his limb in any position most congenial to his feelings, either on the heel or on the side, and altered this position at pleasure.

January 17th, he got up with the instrument on, and walked about on crutches, supporting his limb in a sling. At the end of five weeks from the time of the accident, the machine was taken off; and at the end of six, the man was able to walk without crutch or stick, and had a straight and perfect limb. As there was still some weakness about the muscles of the thigh, he was desired to steady himself a little longer with a crutch or stick.

He has since informed me that he was able to carry a sack of malt the distance of fifteen yards ten weeks after the accident.

Case 2.—I feel indebted to Mr. Key, assistant surgeon of Guy's Hospital, who kindly offered me the treatment of the following case:—

Mary Lovel, æt. forty-five, February 8th, 1822, slipped off the flag-stones, and, her foot twissing under her, she fell and broke the tibia and fibula just above the ankle joint.

Fourteen days after the accident I saw her. The tension and pain were then very great, and the foot was lying in the extended position, where it was kept by the spasmodication of the gastrocnemii muscles, and the fractured end of the lower portion of the tibia threatened to come through the skin. I was informed that the symptomatick fever had run high. She had been out of bed in a delirious state. Leeches, fomentations, and cold lotions had been applied, and had in some measure reduced the inflammation and tension.

The machine was now lightly applied upon the limb. 24th, The pain and tension having materially abated, the short splints were placed upon the leg, and the straps were drawn moderately tight, and the woman desired to sit up with her leg across a chair. In a few days she was able to walk about the room with the assistance of crutches. Three weeks after the application of the machine, the bones were found firmly united, and the limb was straight and perfect. The machine was now taken off, and she was desired to walk about the room with crutches, bearing lightly upon the foot at every step. In six weeks and two days she was able to walk without crutch or stick; but did not throw aside the crutches altogether till the end of the seventh week.

Case 3.—T. C. æt. fifty-five, March 28th, 1822, fell from the step of a carriage, and, his foot twisting under him, the tibia was fractured obliquely into the ankle joint, and the fibula a little above it. He was put to bed with the limb upon the side. Ten leeches were immediately applied to the part, and the bleeding promoted by fomentation. 29th, The machine was applied, and the leg kept wet with sedative lotion. He had considerable symptomatick fever, which was removed by a strong purgative. 31st, The active inflammation having subsided, short splints were applied to the leg, and the man ordered to get up and put his limb across a chair,—April 1st, the fourth clear day after the accident. He was up yesterday, and has been walking about this morning with the assistance of crutches, supporting the limb in a sling, but not without considerable pain when the limb was hung down. The pain in the part soon returned to its former state upon placing the limb in the horizontal position, and in a few days it became immaterial to him whether the limb was placed upon the floor or upon a chair. 13th, He was seized with a pleuritick attack, which confined him to his bed three days. 22d, The twenty-fourth clear day after the accident, the instrument was taken off, and the bones were found straight and firmly united. 23d, Soap plaster and a bandage being applied, he was desired to walk about with crutches, bearing lightly upon the foot at every step. Five weeks after the accident, this man was able to walk across the room without crutch or stick; but as he had not yet full power over the muscles of the leg, he was desired to steady himself with one or the other a little longer.

Case 4.—A lady of rank and fortune received a blow from the heel of a horse, as she was on horseback, on the lower part of her stirrup leg. The force fractured the fibula about two inches and a half above its lower extremity, and the tibia an inch and a half above the point of the inner malleolus. Eight weeks after the accident, finding she had no power over the limb, she came to town to consult Sir Astley Cooper, and by his recommendation requested my attendance. The fibula was at this time united close to the side of the tibia, and the leg deformed in consequence; but distinct crepitus and preternatural motion still remained between the fractured surfaces of the tibia. The machine was applied, and in five weeks and three days the tibia also was found firmly united. During the cure, the lady walked about with the assistance of crutches, carrying the limb in a sling; received company; or took an airing in her carriage at pleasure.

I might add other cases, but these are sufficient to show the utility of the instrument I have endeavoured to describe, and the validity of the principles upon which it was constructed.

In speaking of the mechanical treatment of fracture, it might have been expected that I should say something upon the use of plasters and bandages; but as it regards the treatment of simple fracture, I have nothing to add to the general plans which would prove interesting to the surgeon, or useful to the patient. What I have to say upon this subject will come in better with some observations I have to offer upon the great advantages which arise from the use of this instrument, in dislocations of the knee and ancle, compound fracture, and cases of non-union; but these I must reserve for a future period.

82, *Great Surrey-street, Blackfriars-road.*

ARTICLE VIII.

MEDICAL JURISPRUDENCE.

Translated from the French.

INSANITY.

AN insane person being incapable of appreciating either the morality or the consequences of his actions, cannot be considered as responsible to civil society for his violations of its laws. For the same reason he is not allowed the exercise of his civil rights, nor is he required to fulfil the duties imposed on other citizens. The abuses which may result from a misapplication of these exceptions, the personal safety of the insane person, as well as a regard to the publick safety, require on one hand, medical skill, in order to ascertain the reality of any case of insanity; this is the province of the medico-jurist: on the other hand, medical police combines and puts in execution the means necessary to alleviate the situation of the insane person, and at the same time prevent any danger to himself or the community.

Mental alienation does not require the aid of medico-legal skill, except in cases where its existence is doubtful; and it will be readily perceived that it is much more difficult to prove its reality, when the individual who is the subject of it is interested either in feigning or concealing his situation, than when it is imputed to him by others. In all cases the following general rules should be adopted: 1st, To consider whether it be supposable that any motive of interest may influence either the insane person or any other, to dissemble, to pretend, to conceal, or to impute mental alienation. 2d, To determine, by as rigourous an analysis as possible, all the characteristicks of the case in question and to what species of insanity it belongs. This rule is specially important inasmuch as it must serve as the principal basis of observation. In fact, if the insanity be imputed against the wish of the subject of it, it will generally be very easy for the physician to perceive whether the pretended madman exhibits by his actions or conversation any symptoms of the disorder imputed to him. If the insanity be feigned, it is very difficult for the pretended madman to

avoid some act inconsistent with the mental alienation which he affects, and thereby the physician will sooner or later discover his true situation. 3d, To ascertain whether the causes of the intellectual derangement be proportioned to the effect. Here it will be perceived that it is important to examine the conformation of the skull as well as of the organs of the senses and of speech. It will however be necessary to avoid drawing any hasty conclusions from the state of these organs. Derangement, for instance, (particularly when not hereditary,) may exist in an individual whose head externally appears perfectly regular. A small head or one deformed in some particular part, does not always indicate a defect in the intellectual faculties. Any malformation should be considered only in connexion with other circumstances. 4th, It is essential to have particular information as to the time of the commencement of the malady. Its reality will be more probable if the person should have committed any acts of insanity previous to the time when circumstances occasioned suspicions of interested motives on the part of himself or any other person. For example, if a criminal exhibit marks of insanity after being apprehended and confined, the doubts as to the reality of his insanity would be much better founded than if he had exhibited those traits previously and while he was free. 5th, Finally, threats and harsh treatment should be excluded as much as possible from these investigations. They should only be allowed when they are necessary to the completion of a mass of evidence sufficient to place the fraud beyond any doubt. In particular, it should not be forgotten that a sudden and powerful excitement of the passions has sometimes effected a cure, and that therefore in such a case the inference that insanity had never existed would be incorrect.

Insanity may be acute or chronick. By the first I mean that which being produced by a temporary cause is temporary in its effects, and which having once ceased leaves no fears of its return. Of this kind are acute feverish delirium, drunkenness, and the delirium caused by vegetable poisons. Each of these three conditions is occasionally met with in the history of pretended and dissembled maladies. An individual, for example, suffers from bad treatment; an accidental disease ensues; the sick person from a spirit of revenge endeavours to seem more

injured than he is in reality; he appears delirious in order that the danger he is in may be attributed to the blows he has received. This case (more frequent than is generally supposed) requires great penetration on the part of the physician, who can only distinguish it by carefully remarking the phenomena exhibited by the diagnosticks and duly appreciating the efficacy of the causes alleged either by the sick person or others. Another test may also be adopted by proposing disagreeable or even painful remedies and observing whether such propositions produce upon the pulse or countenance of the patient any changes indicative of fear. There is no certain method of distinguishing real from counterfeited drunkenness in persons who possess the art of counterfeiting it in a high degree of perfection and who have taken a small portion of inebriating liquid but of which the quantity has not been sufficient to derange their reason. This difficulty perhaps may partly explain why in many countries the laws make but little difference in the punishment of crimes committed in or out of a state of intoxication; besides, it is seldom a subject of judicial enquiry until it is past, and then there are no means of ascertaining the fact but by the testimony of witnesses, which is of less importance to physicians than to lawyers. The delirium caused by poisonous substances may aid in counterfeiting the periodical mania of which I shall treat presently, or they may be used to cause it to be imputed to others. But, besides that narcotick poisons, as Mahon observes, produce symptoms which are peculiar to them and which the physician can easily distinguish, the delirium caused by them is of short duration and is, in proportion to the strength of the dose, followed by a disordered state of the nervous system and by a soporifick affection, which are not observed (at least in so great a degree) in periodical mania.

The authors who have written on the subject of chronick insanity have not yet been able to fix upon sufficiently marked characteristicks to determine its numerous shades of difference. The treatises on Medical Jurisprudence are therefore limited to the three principal species of this malady, viz. delirium, melancholy and fatuity. Professor Pinel has with more precision divided mental alienation into five principal species, and we shall adopt his division after having made a few remarks

on those causes of insanity which it is important that the medico-jurist should duly appreciate.

The proximate causes of chronick insanity are generally beyond the reach of our enquiries; but this is not the case with the remote or external causes: these we can frequently discover by etiological examination, and the following are the essential points on which it should be founded, viz. *hereditary disposition*: this furnishes one of the strongest presumptions in favour of the reality of a case of insanity. *Temperament:* an irritable, harsh temperament, as is well known, predisposes to melancholick affections of the mind. *Manner of living:* the information that may be obtained on this subject will afford some light as to the state of the mental faculties. Thus, profound meditations, an agitated mind, a monotonous inactive life, excessive manual labour, (particularly if performed in a dry warm atmosphere,) or a sedentary life passed in such postures as are painful or prejudicial to health, are causes which may more or less influence the derangement of reason. *Education:* its influence upon the direction of our thoughts is well known; for example, in a case of religious phantasy, the reality of which may be questioned, ought not this opinion to have some weight if it be known that the supposed insane person has not been educated in such a manner as to cause him to be easily overcome by religious feelings? The same may be said of the *influence of the passions:* of these such as are the most violent and habitual are among the most frequent causes of mental derangement. In men, says Zimmerman, insanity is most frequently caused by ambition; in women, by jealousy; in girls, by love. Thus it generally happens that the actions and conversation of the insane are characterized more or less strikingly by the passions which have had the most powerful influence. These characteristicks cannot fail to enlighten the medico-jurist on the subject. The *influence of climate:* the inhabitants of hot countries are subject to more powerful nervous excitement than those of cold climates. The former are therefore more subject than the latter to those species of insanity which arise from a heated imagination. *Excessive cold, a humid and cloudy atmosphere,* may also affect the mental faculties; but the effect of these is generally the reverse of that produced by heat. If the one exalt and raise

the imagination beyond the bounds of reason, the other, on the contrary, depresses and enfeebles the understanding. These principles, with other indications, will serve to show the nature and reality of any case of insanity. Thus mania may be inferred most readily in the case of an individual born and educated in a hot climate; melancholick in a case where the subject has resided many years in a humid, cloudy atmosphere; and idiocy in one who has long been exposed to the influence of intense cold. Further, there are certain organick impressions, caused by the prolonged influence of climate, which remain after the cause is removed. To the examination of these general causes should be added also the circumstances which may have preceded or accompanied the loss of reason. The number of these is immense, and the importance of knowing such of them as can be learnt will be readily perceived.

In a due appreciation of these circumstances, and consequently in the psychological examination, consists principally the skill of the medico-jurist; and it is in this point of view that the proofs proper for regulating his decision should be arranged. Thus in idiocy, which has been very improperly divided into *fatuity*, *imbecility*, and *stupidity*, the precept of Paul Zacchias, which considers a kind of pusillanimity and submissiveness as pertaining to idiots, should be recollected. It should nevertheless be also recollected that long continued persecutions sometimes produce in its unfortunate victims opposite effects, such as impetuous excesses which properly belong to maniacal delirium, but which are transient. Finally, the memory and conception of a supposed idiot should be put to the test. In experiments of this kind however, it will be perceived that the individual supposed to feign insanity, should not be suffered to perceive the object in view.

The two opposite aspects presented by melancholia and mania, of which the one consists in self-sufficiency and a kind of vain-glorious conceit, and the other in a pusillanimous depression, a profound consternation, merit the greatest attention on the part of the physician; for I cannot believe that these different forms can co-exist in the same individual; and this may nevertheless happen in a case of feigned melancholia. In all cases, the subjects of real melancholia as well as of real mania, are only affected by such objects as have relation to the subject of their disease.

Some individuals, says Mahon, who are really insane, particularly those of the melancholia and of the raving madness, are subject to different passions only in a vague and uncertain manner, in no way proportioned to the circumstances of their situation: this principle should govern in the application of any moral test. A real melancholick is strongly prepossessed in favour of his own notions: the least contradiction puts him in a bad humour. A pretended melancholick is apt to neglect this essential point in the part he is playing if the contradiction be artfully conducted. The taciturnity peculiar to those in a state of real melancholia, often betrays those who feign this malady. The complaints of the latter when they are sure of being heard or seen, their repugnance to remain in gloomy situations, are not observed (at least in the same extent) in the former. The latter also have unquiet, interrupted sleep; the former sleep quietly. Some melancholicks as well as some maniacks are very insensible to the action of drastick purgatives. This sign however insufficient by itself, may nevertheless have some weight when combined with others. The same may be said with respect to certain external characteristicks which generally distinguish melancholicks from maniacks and which denote a dry irritable temperament, such as the vivacity of the eyes, the fulness of the veins, black or red hair, hepatick complexion, leanness, &c.

Mania with Delirium, is of all kinds of mental alienation the easiest to ascertain: it is sufficient to study the picture of it which M. Pinel has drawn, to prevent any mistake on the subject.

Dementia or extinction of thought, possesses in an equal degree strongly marked characteristicks; but it is particularly the rapid succession or rather alternation of isolated ideas, of light unaccountable emotions, which render it easy to counterfeit. Here the test of which I have spoken above should be applied, which consists in exciting a moral emotion. This will have no effect, or at most one that is slight and disproportioned to the cause, if the malady be not feigned. Besides, however skilful may be the person attempting the imposition, there is always a kind of hesitation and reflection to be observed in his discourse: his wild ideas do not succeed each other with the same rapidity as those of a person whose under-

standing has really been destroyed. Another test would be to repeat to the insane person a series of ideas recently uttered. The pretended madman, instead of wandering incoherently, would judge it most expedient to repeat the same words for the purpose of proving his madness.

There is no species of insanity which so much deserves the attention of the physician and the jurist as *mania without delirium.* This was nearly unknown before the investigations of M. Pinel, and is even now frequently unknown or neglected. It has brought to the scaffold many deplorable victims who merited compassion rather than punishment. Unfortunately I perceive no other means of ascertaining this wretched state in which an instinct at the same time destructive and irresistible hurries on its victim to the commission of crimes the most abhorrent to nature, except a confinement indefinitely prolonged, during which he should be observed at those moments when he is excited by his dreadful propensity. Then, if it be real, an extreme agitation will be perceived, with flushings of the face, eyes sparkling, and perhaps also, as in cases of propensity to suicide, the most highly wrought state of hypochondriack excitement. Women are in general more subject to this species of mania than men, especially at the period of menstruation (particularly when in a morbid state) or during gestation. These different situations, then, require great consideration. Moreover, the moral circumstances which precede or accompany crimes generally show whether they are the result of criminal intentions or derangement of intellect; that is to say, that in a real criminal there is always some motive of personal interest by which the moral cause of his act may be known. Thus a homicide followed by robbery cannot be attributed to mania without delirium.

There still remains something to be said respecting certain species of insanity which frequently require the attention of medico-jurist, viz. *nostalgia*, *ecstasy* or religious enthusiasm, and *demonomania* or religious melancholy. To these may be applied what has been said generally of exclusive delirium. Thus true nostalgia is distinguished from false by a kind of reserve respecting the cause of depression. This malady brings with it an abatement and slowness of the pulse, a greater or less alteration of the expression of the countenance, a pain-

ful and spasmodick respiration, and a prolonged and rapidly emaciating want of appetite. A combination of these appearances can hardly be feigned. Ecstacy, demonomania or obsession, are in many cases the result of mental alienation which is distinguished by its peculiar characteristicks. In contrary cases they are produced by the grossest knavery. Impostors who intend to play such parts, add to them accessory phenomena which only serve the better to unmask them.—Such, for example, are the most exaggerated contortions, the excretion of extraordinary substances, polyglottisme, &c. The real ecstaticks and demoniacks belong then to the madhouses: to the courts of justice it pertains to exercise the others.

I need not remark how much a periodical characteristick increases the difficulty of ascertaining the truth in a case of doubt whether insanity be feigned, concealed or imputed.

The only method to succeed in such a case is to place the patient under a strict or rigorous scrutiny for a long time, not only for the purpose of observing the paroxysm, but also to prevent artificial excitement by certain poisonous substances. It should particularly be remarked whether the periodical accession of the malady be regular or irregular. Dementia and idiotism are seldom regular; melancholia is more frequently so; mania with delirium is generally so; and mania without delirium is so invariably. It is particularly necessary to adopt a redoubled vigilance at those periods when, according to Professor Pinel, the mania is most generally renewed. Particular attention should be paid on the approach of storms which produce on all kinds of insanity a sort of effervescence; and perhaps under these circumstances electricity and galvanism might afford some means of obtaining light on the subject. But as we find also cases of periodical mental derangement independently of the influence of the seasons, the examinations of the medico-jurist should also be directed to the causes which may produce the paroxysms, (the menstrual flux, for instance,) and he should allow them their due weight. Finally, it is to be observed that in melancholia and still more in periodical mania, the patient has generally during his lucid intervals but an obscure idea (or none at all) of the approach of those paroxysms, and consequently his situation is saddening

and he is unwilling to speak of it. A pretended maniack would act differently and would endeavour to excite the compassion of his visitors.

The superintendance exercised by the police in all countries over insane persons ought to be considered under the two relations which have been exhibited at the commencement of this article. The hospitals for lunaticks serve this double purpose inasmuch as they afford to the man deprived of his reason those attentions which his situation requires, and at the same time prevent him from doing any injury to himself or to others The state is not bound to take upon itself the charge of a deranged person, but it has the right to make his family responsible for any disorders that he may cause, and therefore compel them to keep a strict watch over him; the want of pecuniary means alone can form any obstacle to this measure: in this case the patient ought to find an asylum and society its security in these establishments. Thus the insane person becomes a patient whose disorder requires the aid of the state, and the lunatick hospitals ought to be considered rather as charitable institutions than as prisons. The practice in some countries of confounding them together, and treating the insane with the same rigour as the vilest criminals, is manifestly wrong. I shall here summarily point out the most essential qualities requisite to the real utility of these establishments. 1st. Salubrity of situation, especially as to temperature, which should be neither too warm in summer nor too cold in winter. 2d. Safety, that the lunaticks may not escape nor be exposed to any personal danger. These precautions need not prevent the absence of every thing that may appear gloomy, and give the idea of imprisonment. 3d. Salubrity of clothing, particularly as regards extreme cleanliness. 4th. An abundant and reasonable supply of such therapeutick and dietetick means as may contribute to the restoration of health, such as warm baths, shower baths, utensils and conveniences for different mechanical occupations, and particularly a garden. 5th. The salubrity of their meats and drink. 6th. A strict attention to the personal qualities of the physician, as well as of all the attendants, down to the lowest grade; the physician should possess extensive knowledge and a philosophick mind; and the others gentleness, extreme patience, neatness, and sobriety. 7th. A systematick

division of the different classes of the insane, so that they may not injure each other. These precautions (perhaps too general) will nevertheless show that lunatick hospitals are among the most expensive institutions, and those which are the most difficult to organize properly. These difficulties, it appears to me, ought to induce several provinces to concentrate their means for the formation of a general establishment upon the most perfect system possible, rather than to make a number of imperfect establishments. M. Marc.

(J. P. F.)

ARTICLE IX.

NATURAL HISTORY.

A description of some new species of Hymenopterous Insects,* *by* Thomas Say, *Professor of Natural History in the University of Pennsylvania and of Zoology to the Philadelphia Museum.*

THE following descriptions of insects belonging to the order *Hymenoptera*, of Linné, have been made out from specimens collected by myself whilst engaged as a member of Major Long's exploring party under the orders of the Secretary of War, J. C. Calhoun, in traversing the region of country which extends from the river Mississippi to the base of the Rocky Mountains. These insects constitute about one-third of the whole number of new Hymenoptera discovered during the expedition: the remainder will be the subject of a future essay.

ALLANTUS. *Jurine.*

1. A. *ventralis.* Black; feet before and abdomen beneath white.

Inhabits Arkansa.

* The name of this class of insects is derived from two Greek words, υμην-ενω, membrane, and πτερα, wings. The insects belonging to it have most commonly four naked wings, with longitudinal nervures, the inferiour of which are shorter and straighter than the superiour, to which they are attached. They have six feet, a mouth furnished with distinct mandibles, with jaws and a lip which by their union form a trunk or sucker, which is called tongue. The females most frequently have the abdomen terminated by a little needle or awl. The wasp and the bee are familiar instances of the general character belonging to this class of insects. The service rendered by those, which like the wasp prey on inferiour insects, is scarcely less acceptable than that performed by the bee in the collection of honey for our use. The manners of this class are very interesting throughout, whether we consider them engaged in the construction of receptacles for their progeny, or selecting with great apparent forethought and much labour, the food which is destined for their subsistance.—Ed. W.Q.R.

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Body black; *nasus*, *labrum*, *mouth*, abbreviated line above the eye, and large spot beneath it, white; *thorax* with a line before the wing, small spot each side on the scutel, white; *wings* a little dusky; *feet* white before; *pectus* with a white line each side, and somewhat testaceous central spot; *tergum* immaculate; *venter* white.

Length 9-20ths of an inch.

2. A. *bifasciatus*. Black; tergum with a white band at base, and a rufous one in the middle.

Inhabits Arkansa.

Body black; *nasus* white; *labrum* and *palpi* dull whitish; *thorax* with a yellowish line before each wing; *scutel* yellowish; *wings* dusky; nervures brown; *feet* white; tips of the posterior thighs and of their tibiæ, black; *tergum* with a white band at base and a rufous one on the middle.

Length 7-20ths of an inch.

For this handsome species I am indebted to Mr. Thomas Nutall.

3. A. *externus*. Black; tibia white on the exteriour side.

Inhabits Missouri.

Body deep black; *head* with a spot each side on the nasus and base of the mandibles, white; *wings* fuliginous; nervures black; thighs at tip above, incisures of the coxæ, exteriour side of the tibia and tarsi, white; *posteriour feet* robust.

Length 9-20ths of an inch. A female.

4. A. *pallipes*. Black; thorax rufous before; feet white.

Inhabits Missouri.

Body black; *labrum* and *palpi* white; *thorax* with a rufous triangle before, a rufous spot on each side of the disk, another beneath the origin of the wing and tip of the scutel rufous; a whitish spot before the wings; *wings*, a little dusky; carpus whitish; *feet* white; *posteriour thighs* blackish in the middle; *tergum*, with the lateral basal margins of the segments, rufous; *venter* rufo-testaceous each side, dusky in the middle.

Length 7-20ths of an inch.

DOLERUS. *Jurine.*

D. *collaris*. Black; thorax, rufous before.

Inhabits Missouri.

Body entirely black, with the exception of a yellowish-rufous

anteriour thoracick triangle, and anteriour segment or collar of the same colour, which descends on each side.

Length to the tip of the wings 9-20ths of an inch.

TREMEX. *Jurine.*

1. T. *sericeus.* Ferruginosis; tergum yellowish sericeous.

Inhabits Missouri.

Body ferruginous, punctured; *head* with three indented lines on the vertex, and a transverse one between the eyes; antennæ yellowish; *thorax* scabrous before, disk with a black spot on each side; *wings* brownish-fuliginous; *carpus* yellowish; *feet* pale yellowish; *thighs* ferruginous; *tergum* pale yellowish-fulvous, sericeous; *pectus* above the posteriour feet black.

Length, exclusive of the oviduct, nearly one inch. The specimen is a female.

2. T. *obsoletus.* Ferruginous; tergum black.

Inhabits Missouri.

Body ferruginous punctured; *head* with three obsolete indented lines upon the vertex, and a transverse one between the eyes; *antennæ* pale ferruginous; thorax scabrous before, with a black spot on each side of the disk; *wings* yellowish brown, hyaline; *carpus* rufous; *posteriour tibia* and *tarsi* black at their tips; *tergum* black, polished segments, particularly those near the base, with an obsolete rufous spot on each side, more distinct on the fourth segment.

Length 4-5ths of an inch.

A male; the lateral abdominal spots are very indistinct.

ANOMALON. *Jurine.*

A. *flavicornis.* Black; antennæ yellow; wings blackish; abdomen very much compressed.

Inhabits Arkansa.

Mouth piceous; *thorax* with two approximate dilated grooves confluent behind; *scutel* united to the thorax by a carinated line each side; tip of the superiour wings, and tip and inner margin of the inferiour wings, broadly margined with blackish; *abdomen* dilated towards the tip, broad, very much compressed; first segment sub-cylindrick, nearly as long as the 2d and 3d segments taken together, and geniculate at its union with the second segment.

Length more than one inch.

I obtained an individual specimen near the Rocky Mountains.

MUTILLA. Of *Authours.*

M. *quadriguttata.* First segment of the tergum with four yellow dots.

Inhabits near the Rocky Mountains.

Body feruginous, with confluent punctures; *antennæ* and *mandibles* black at tip; *tergum* black, first segment with four yellow dots placed nearly equidistant two and two, the anteriour pair smaller; posteriour segments and tip of the first segment with yellowish sericeous hair.

Length more than half an inch.

SCOLIA. *Latreille. Jurine.*

1. S. *viii. maculata.* Thorax black, scutel with a yellow line; tergum four spotted each side.

Inhabits Arkansa.

Head black, with the vertex, basal joint of the antennæ, anteriour margin of the clypeus and base of the mandibles dull rufous; *thorax* black; *scutel* with a yellow line; *metathorax* rufous each side and above; *superiour wings* costal margin rufous, blackish from beyond the middle to the tip; cubital cells three, intermediate one petiolated and receiving two recurrent nervures; *feet* rufous; *tergum* dusky rufous, with four transversely oval yellow spots, on each side of which the anteriour one is very small and the posteriour one nearly extended into a band.

Length nearly 7-10ths of an inch.

2. S. *tricincta.* Black; collar with two, scutel with one yellow spot; *tergum* trifasciate with yellow.

Inhabits Arkansa.

Body black; *front* with obscure yellowish hair; *mandibles* rufous at base; *collar* with a yellow spot each side, sometimes united, *squammula* rufous; *scutel* with a small yellow spot; *feet* rufous; *superiour wings* with rufous nervures, costal margin near the tip dusky; *cubital cells* two, the second receiving the recurrent nervure; *tergum* with three yellow bands, of which the first and second are interrupted in the middle, first segment with an obscure piceous band.

Length nearly 3-5ths of an inch.

3. S. *confluenta.* Black; tergum trifasciate with yellow.

Inhabits Arkansa.

Body deep black; *antennæ* short, arquated; *front, base of the head,* and *anteriour margin of the thorax,* with yellowish cinereous

hair; *thorax* immaculate; *nervures* ferruginous, *cubitals* two, the second receiving two recurrent nervures; *metathorax* acutely edged and hairy above, behind concave and rugous, with elevated abbreviated transverse lines; *tibia* rugous armed with prominent spines; *abdomen* segments ciliate on the edge; *tergum* trifasciate with yellow; first band with a small black dot on the middle of the anteriour edge; second band composed of two confluent triangles; third band also composed of two confluent triangles, but with a black dot on the exteriour edge of each.

Length 9-10ths of an inch.

A species which seems to be very closely allied to S. *fopulana* Fab.

PLESIA. *Jurine.*

P. *marginata.* Yellow; abdominal segments margined behind with black; beneath black.

Body yellow; *head* black, varied with yellow; *collar* with the anteriour declivity black; *thorax* black; squammula and large central spot yellow; two spots on the scutel yellow; *metathorax* and a large spot on the pleura, pale rufous; *feet* black; a whitish spot near the tip of the posteriour face of the tibia and another upon the anteriour face of the anteriour pair; *tergum* with the posteriour margin of the segments black; *anal segments* black; *venter* with three triangular yellow spots on each side.

Length less than 3-5ths of an inch.

This species agrees in character with the genus Plesia of Jurine; but it differs from *Mizine* of Latreille, by having the maudibles entirely destitute of teeth, a character which it possesses in common with *Meria Illiger*, but the form of its wing cells will not admit of its being referred to the latter genus.

SAPYGA. *Latreille. Jurine.*

S. *subulata.* Black, elongated; thorax spotted, and abdominal segments margined with yellow; feet yellow.

Inhabits the United States.

Body elongated, black, apparently glabrous but covered with short hair; *clypeus* and base of the maudibles, yellow; *mandibles* with a single tooth near the tip; *antennæ* rather longer than the thorax, cylindrical, attenuated at base; *thorax* bifasciate before the wings, the anteriour band interrupted; a spot on

the disk and two transverse scutellar spots yellow; *metathorax* with two longitudinal yellow spots; a yellow triangular spot under the origin of the wings; *feet* yellow, black at base; *wings* tinged with ferruginous; *abdomen* segments with yellow posteriour margins, interrupted on the middle of the venter, the anteriour one not extending beneath; anteriour segment abruptly rather smaller than the second one; *aculeus* naked, exserted, inflexible, recurved.

My specimens are males. It inhabits Missouri as well as Pennsylvania, and is not uncommon. Probably it is allied to *Elis Sexcincta*, Fab.

POMPILUS. *Fabricius. Latreille. Jurine.*

P. *formosus.* Purple; wings rufous, dusky at tip.

Inhabits Arkansa.

Body greenish purple; *head*, *thorax*, darker; *antennæ* and *feet* black; *wings* bright yellowish red; *base* black; terminal submargin of the superiores and terminal and inner sub-margins of the inferiores, dusky; the corresponding margins pale.

Length of the body of the male 9-10ths of an inch.
" to the tip of the wings more than 1-10th of an inch.
" of the body of the female 1 and 2-5ths of an inch.

A very large and beautiful species, which arrests every eye by the unusual colour of its wings. It flies rather slowly, and is often found on flowers in company with *Stizus grandis.*

AMPULEX. *Jurine.*

A. *canaliculata.* Black; superiour wings with a blackish band; antennæ and feet piceous.

Inhabits Missouri.

Mandibles at tip and *labrum* rufous; *front* with a carina above each of the antennæ and another in the middle which descends upon the hypostoma; *collar* densely punctured and grooved in the middle; *thorax* sparsely punctured and with two distant longitudinal impressed lines; *metathorax* with eight dilated grooves, in which are numerous transverse elevated lines; *wings* brownish, superiours with a blackish band and black stigma; *abdomen* polished immaculate.

Length nearly 2-5ths of an inch.

These insects have a singular appearance in consequence of their elongated collar and metathorax. The species resembles the *Fasciatus, Jur.* but differs in the number of grooves on the metathorax.

STIZUS. *Latreille. Jurine.*

S. *grandis.* Segments of the abdomen, each with a yellow band and lateral blackish spot.

Inhabits Arkansa.

Antennæ black, three basal joints rufous; *front* and *labrum* yellowish; *thorax*, anteriour angle whitish, first segment margined with white; *scutel* ferruginous; *wings* ferruginous, dusky at tip; *feet* ferruginous; *tergum* ferruginous, each of the segments with a yellow band and lateral, blackish, oblique, sublinear spot; *venter* with an obsolete margin on the second segment and obsolete lateral triangles on the remaining segments, yellowish.

Male: head, thorax, base of the terminal and abdominal segments and beneath, black; length to the tip of the wings 1 and 1-5th of an inch.

Female: ferruginous; length to the tip of wings 1 and 3-5ths of an inch. A very fine insect, rather larger than the *speciosus* of Drury. We observed it common on flowers within about one hundred miles of the Rocky Mountains.

2. S. *renicinctus.* Black, opaque; abdomen polished with a rufous band above; wings dark violaceous.

Inhabits Arkansa.

A broad bright rufous band occupying the basal moiety of the second segment of the tergum; *wings* blackish violaceous; *anal spines* prominent.

Length (male,) 1-2 an inch.

LARRA. *Fabricius. Latreille.*

1. L. *abdominalis.* Black; thorax with cinereous down; abdomen, first, second and third segments, rufous; feet black.

Inhabits Arkansa.

Body black; *front* argenteous; *thorax* with cinereous down; *feet* black, with argenteous hair; *abdomen*, first, second and third segments, bright rufous; on the tergum each with a lateral silvery sericeous lunule; terminal segments black, of which the fourth one has a lateral sericeous lunule; anal segment with a rufous reflection above.

Length of one specimen 11-20ths, of another 7-10ths of inch.

With the exception of the tibia, this species, in point of colour, resembles *L. tricolor* F. but differs from it in form, the abdomen in this respect being more closely allied to that of *L. ichneumoniformis.*

2. L. *tarsata.* Black; abdomen rufous; tarsi rufous.

Inhabits Arkansa.

Body black; *abdomen* entirely rufous, drawing on sanguineous; *tarsi*, with the exception of the first and second ones, rufous; *wings* hyaline.

Length 2-5ths of an inch.

ASTATA. *Latreille.*

A. *bicolor.* Black; abdomen bright rufous, dusky at tip.

Inhabits Arkansa.

Head, minutely punctured; *mandibles*, piceous at tips; anteriour *stemmata* of the male, very large; thorax minutely punctured; *wings* hyaline; *nervures* blackish; stigma pale rufous; *abdomen* rufous sanguineous; the male black at tip; *scutel* on the disk impunctured, polished; *metathorax* with crowded dilated superficial punctures.

Length less than 2-5ths of an inch.

On a transient view this insect resembles *Larra* tarsata. I obtained it near the Rocky Mountains.

NYSSON. *Latreille. Jurine.*

N. 5 *spinosus.* Black; abdomen fasciate with glaucous; metathorax four or five spined.

Inhabits Arkansa.

Body black; *antennæ* whitish beneath; *clypeus* white with a longitudinal black line; *mandibles* black; *margin of the collar*, tuberculi, (Kirby,) an oblique interrupted line above the wings, scutellar line and tips of the metathoracick spines, whitish; *spines* about five, the superiour ones largest, the intermediate one of the inferiour series obtuse, sometimes obsolete; *tibia*, anteriour pairs white before; *anteriour tarsi* with elongated setæ before, (as in many species of Gorytes;) *abdomen* with the posteriour margins of the segments glaucous, above somewhat iridescent.

Length less than 2-5ths of an inch.

CARABRO. *Fabricius. Latreille.*

C. 10 *maculatus.* Black; tergum with five yellow spots each side.

Inhabits Missouri.

Hypotostoma and *front* with silvery hair; *antennæ* black; *scapus* and first joint of the flagellum, yellow; *thorax* punctured; *collar* yellow, uninterrupted; *scutel* and base of the metathorax

with each a transverse yellow line; *pectus* with two yellow spots of which the posteriour one is transverse; *wings* brown; *feet* yellow; *thighs* rufous, blackish at base; spots of the tergum large and distinct, the posteriour ones approaching more closely on the back beneath immaculate.

Length 3-5ths of an inch.

Larger and having one spot more on each side than *C. maculatus*, Fab.

PHILANTHUS. *Fabricius. Latreille.*

1. P. *canaliculatus.* Pale yellow; back of the head, disk of the thorax and incisures of the thorax, reddish brown.

Inhabits Arkansa.

Body pale yellow; back of the head, two longitudinal lines, base of the antennæ, second segment of the thorax and feet, reddish brown; *clypeus* four-toothed on the intermediate lobe; *antennæ* and *mandibles* black at tip; *superiour wings* with a longitudinal dusky line on the middle from near the base to the tip; radial cells descending in an angle to meet the superiour angle of the second aubital cell; *tergum* with a transverse groove on the middle of each of the segments and a marginal smaller one; incisures reddish brown.

Length 11-20ths of an inch.

The specimen from which this description is made out is a male and so very similar in many respects to *Cerceris bidentata* that I should be led to regard it only as a sexual variety if its generick characters, agreeably to the modern arrangements, had not entirely differed from those of that species. In fact, the second cubital cell is not petiolated and the mandibles are entirely unarmed.

2. P. *zonatus.* Black; front, two lines and posteriour submargins of the segments of the tergum, yellow; *feet* rufous.

Inhabits Arkansa.

Body, above black; front yellow, with two black lines descending from the black vertex to the origin of the antennæ; *antennæ* and *mandibles* rufous, black at tip; base of the head rufous; *thorax*, first segment and *scutel*, each with a yellow line; a large rufous spot each side behind the scutel; *superiour wings* with a dusky margin towards the tip; *costal nervure* dull rufous in the middle; radial cell descending in an angle to meet the superiour angle of the second cubital cell; *tergum* with a trans-

verse on the middle of each segment and a marginal smaller one; posteriour sub-margins yellow; *feet* rufous; *pectus* black; *venter* dull rufous.

Length 1-2 an inch. The specimen is a male.

Like many species of this genus, the Zonatus is subject to vary in its tints and proportions of colouring. I have a fragment of a specimen which has two yellow lines on the scutel, a yellow V, on each side of which is a large yellow spot sufficiently distinct from P. *ventilabris* F. by the form of the wing cells.

CERCERIS. *Latreille.*

1. C. *frontata.* Nasus elevated; body pale rufous; tergum yellow with rufous incisures.

Inhabits Arkansa.

Body pale rufous; *antennæ* and *mandibles* black at tip; *front* pale yellow; *nasus* elevated at tip from the clypeus, widely emarginate and densely elicited on the anteriour edge, lobes acute; *clypeus* 4-toothed at tip; *wings* dusky blackish on the posteriour margin; *wing scale* and double line on the stutel yellow; *tergum* yellow; incisures reddish brown.

Length of the body 9-10ths of an inch.

The specimen is a female, remarkable by the prominence of the nasal portion of the face, a character which was also pointed out by Latreille, in a species which he calls *Cerceris aurita*, which insect he observed to nourish its young, with insects of the Linnean genus Curculis.

2. C. *bidentata.* Lateral lobes of the clypeus each elevated into a prominent spine; anteriour margin of the superiour wings dusky.

Inhabits Arkansa.

Body pale yellowish; *head* behind the eyes and above, and base of the antennæ, rufous; *antennæ* black at tip; *front* concave, lateral lobes of the clypeus each with a conick prominence perpendicular to the surface; *mandibles* black at tip; *thorax* rufous on the principal segment; *superiour wings* blackish on the anteriour margin, the costal nervure tinged with yellowish in the middle; *tergum* incisures reddish brown; segments each with a transverse groove on the middle.

Length less than 3-5ths of an inch.

In general colour, very much resembles the preceding species from which it may be distinguished by its much smaller size,

and by the two remarkable spines or tubercles situated on the lateral lobes of the clypeus. The specimen is also a female.

ODYNERUS. *Latreille.*

O. *crypticus.* Rufous; wings dusky; *tergum* trifasciate with yellow.

Inhabits Arkansa.

Body rufous, much punctured; *vertex* and *origin* of the *antennæ*, black; *antennæ* dusky at tip; *thorax* with a black spot before the middle; *scutel* bilobate with a longitudinal deeply impressed line; *metathorax* concave; *wings* dusky, paler at tip; *tergum* with three yellow bands, the anteriour one widest and slightly emarginate before, the posteriour one smallest and sub-concealed.

Length more than 2-5ths of an inch.

The third band of the back of the abdomen is sometimes so near the preceding band as to appear like a dilatation of it.

EPEOLUS. *Latreille. Fabricius. Jurine.*

E. 4 *fasciatus.* Black; abdomen quadrifasciate, terminal segment bipunctured.

Inhabits Arkansa.

Body deep opaque black; three basal joints of the antennæ, clypeus and labrum, rufous; *front* around the base of the antennæ, yellow; *thorax* with an anteriour and posteriour yellow line, the latter so arquated as nearly to attain the former; a broader line beneath the wings; beneath the scutel a whitish band and two oblique lanceolate spots; *tergum* 4-banded with yellow, first band very broad, interrupted by a line which is very slightly dilated in the middle; remaining bands narrower, submarginal, entire; terminal segment with an oblique yellow lateral spot; *feet* rufous.

Length 3-5ths of an inch.

On flowers near the Rocky Mountains. It is much larger than *E. mercatus* F.

MEGACHILE. *Latreille.*

M. *latimanus.* Anteriour tarsi dilated and with incurved ciliæ on the inner side; first joint of the intermediate tarsi one-toothed.

Inhabits Arkansa.

Body black, covered with greenish cinerous hair; hair of the front whitish; *antennæ* filiform, glabrous; labrum near the

tip, concave, glabrous, polished, tip slightly ciliated; *mandibles* tridentate on the oblique tip (in the male) and rufous near the tip on the exteriour side; *anteriour feet* much dilated and with whitish hair, dull rufous; knees black; the tarsi dilated and with dense, elongated, incurved ciliæ; *intermediate thighs* ventricose beneath; tibiæ arquated; tarsi dilated, densely hairy on the inner face, less dilated than the intermediate ones; *abdomen*, with the posteriour edges of the segments densely ciliated; *anus* with a deep sinus (in the male.)

Length nearly 3-5ths of an inch.

In the much dilated appearance of the anteriour tarsi, this species is allied to the *apis lagopoda* of Lineus, and its proximate species.

ARTICLE X.

CHRONOLOGY.

A Chronological Table of events connected with the Discovery and Settlement of the Western Country.

By Major Stephen H. Long, of the army of the United States.

1512. PONCE de Leon, a celebrated Spanish adventurer, landed in April on the American Continent, in N. lat. 30°, 08′, and named the country Florida on account of the blooming aspect it then presented. The object of his explorations was to discover a fountain whose waters he was informed possessed the wonderful property of converting old age into youth.

1517. Negro slavery is sanctioned by the king of Spain and substituted in the Spanish American Colonies for that of the Aborigines. The Savages who had been made slaves and compelled to work in the Spanish mines, are liberated.—These measures had been strongly and zealously advocated by Father De las Casas, not on the ground that slavery was at all commendable or justifiable, but because he believed that the sum of human wretchedness would be far less in America if African slavery were substituted for that of the natives.

1524. About this time Florida was granted by the crown of Spain to Francis de Geray.

Verazzani, a French navigator, sailed along the American coast from Florida to Newfoundland and gave the name of New France to the whole country throughout that extent.

Pamphilo Narvaez, Governor of Florida, landed with a large body of Spaniards with the expectation of obtaining abundant supplies of the precious metals. The Indians exhibited gold to them and told them it was abundant in the Appalachian Mountains. Decoyed by this stratagem, the unsuspecting Spaniards were led into an ambuscade, and after a bloody contest, most of them, together with their leader, fell victims to the fury of the savages. 1528

The shores of Acadia, the straits of Belleisle, and the harbours on the coast of Labrador, are explored by the French under Cartier. They penetrated a considerable distance up the river St. Lawrence. 1534.

Cartier ascends the St. Lawrence to the Isle of Orleans, occupies the mouth of the St. Croix as a wintering port, and takes formal possession of the country. He visits Hochelaga, an Indian Capital, and calls the hill near it Montreal. In 1540 he wintered again at the same place on his third voyage to the western continent. He was succeeded by Roberval in 1541, who wintered also at the same port. 1535.

The Mississippi river is discovered by Ferdinand de Soto, who died the year following on Red River, (of Natchitoches.) He had been appointed Governor of Florida then in the possession of Spain, and with unexampled speed explored almost every part of that and the adjacent country. 1541.

A colony of French protestants conducted by Ribaud, landed near St. Augustine and built Fort Charles within about thirty miles of that place. 1562.

The colony and fort founded by Ribaud in 1562, after a sanguinary contest, fell into the hands of the Spaniards headed by Menendez, who caused the few that survived the carnage to be hung up by the neck with this inscription upon their breasts, "Not as Frenchmen but as Hereticks." 1566.

Dominique de Gourgues, a French gentleman of rank and fortune, having fitted out a fleet at his own expense, landed in Florida for the express purpose of taking vengeance of the Spaniards for their inhuman massacre of his countrymen in 1565 at Fort Charles. Many of the Spaniards fell into his 1567.

hands and he caused them to be suspended by the necks with this inscription, "Not as Spaniards, but as Assassins."

1587. St. Augustine is attacked by the English under Sir Francis Drake, and plundered of its military stores, among which were two thousand pounds in specie.

1603. Champlain arrives at Cartier's station, and explores the country by way of Lake Champlain to Lake George.

All the country situated between the fortieth and forty-sixth degrees of N. latitude, is ceded by the king of France to Du Monts who forms a settlement in Acadia.

1608. Quebec is founded by Champlain, who plants a colony at that place. This is the first permanent settlement made by the French in that part of the American continent.

1629. Quebec and all the French settlements in Canada, submitted without a struggle to the English, a British squadron having entered the St. Lawrence with hostile intentions. This conquest, however, was abandoned in 1631, two years afterwards.

1631. Lakes Huron and Michigan are discovered by the French.

1660. It was deemed essential to the safety and even existence of the French settlements in Canada to humble the Iroquois Indians. Measures were accordingly taken with a view to extirpate that powerful nation. The Indians being supplied with arms and ammunition from New York, then a Dutch colony, were enabled to make a vigorous defence during the four subsequent years, while the war in the mean time was carried on with much spirit on both sides.

1663. A great earthquake is experienced in Canada, which is said to have buried a lofty chain of mountains 300 miles in length converting the region into a plane.

1664. The English get possession of New York, and become competitors with the French in extending their claims to the country by conquest and discovery.

1667. The Canadians receive a large reinforcement from France, which enables them to furnish three thousand men for the field. At this time however, the French began to be sensible that a war of extermination, however successful, was altogether impolitick, inasmuch as it could only serve to curtail their trade with the Indians, which it was their true policy to

increase. Measures were accordingly taken for a general pacification.

Proposals for peace were made by the French and accepted by the Indians, and the war which had been of sixty years continuance, was terminated to the satisfaction of all parties. 1668.

The Mississippi is discovered and a considerable portion of it explored by Jolliet and Marquette, French Missionaries from Canada. 1673.

Fort Crevecoeur on the Illinois river, about 150 miles from the Mississippi, is built by the Sieur La Salle, who arrived at that place with a party amounting only to thirty-two men. Father Lewis Hennepin, a Franciscan Friar, one of La Salle's party, arrived at the Mississippi on the 8th of March, and explored that portion of it situated above the mouth of the Illinois. 1680.

M. de La Salle aided by M. Tonti establishes settlements at Cahokia and Kaskaskia, and some other places, and explores the Mississippi from the mouth of the Illinois to the ocean. 1683.

M. de La Salle arrives from France with a colony of 170 persons exclusively of the sailors attached to his squadron, with the intention of forming an establishment at the mouth of the Missippi. But owing to the want of a proper knowledge of the coast they enter the Bay of St. Bernard, and land at the mouth of the Guadaloupe on the 18th February. A fort is built at the place of their landing, to shelter them from the hostilities of the Indians. All their vessels are wrecked in the bay, and a large portion of their provisions is lost. 1685.

The village and Garrison usually denominated the post of Arkansa, are established by the French. At this time the nation of the Arkansas is esteemed one of the most numerous and powerful in the country.

M. de La Salle with twenty men attempts a passage over land from the bay of St. Bernard to Kaskaskia, but is unfortunately assassinated by two of his own party, on the 19th of March, probably near the river. 1687.

An attempt is made by the English to get possesson of Quebec, which proves unsuccessful. 1691.

An establishment for working mines of copper &c. is formed on the Mississippi about 600 miles above the mouth 1695.

of the Illinois, but was soon afterwards broken up by the Indians.

1696. Pensacola is founded by the Spanish for the purpose of frustrating the endeavours of the French to establish colonies along the gulf of Mexico. In order more effectually to annoy the French, they even endeavour to win over the Savages to their interests, and try to induce them to attack the French immediately on their landing, a colony being shortly expected.

1697. The peace of Ryswick terminated all controversy between England and France respecting their possesions in America, and the French were left in quiet possession of Canada.

1699. The first French colony, under the direction of M. d'Iberville, is planted at the entrance of Perdido Bay. A fort is built at Biloxi. M. de Bienville is associated with Iberville in the government of the colony. From this period the country on the Mississippi is called Louisiana, a name given to it by Hennepin ninety years before, in honour of Louis XIV.

1700. M. de Bienville and St. Dennis, by order of Iberville governour of Louisiana, ascend Red river as far as Natchitoches, for the purpose of ascertaining if the Spanish had made any establishments in that part of the country. It eventually proved that no establishment had been made by them east of the Rio del Norte.

1702. The French colony established at Biloxi received orders from the French government to remove to Dauphin island. This measure had been dictated in consequence of a rumour that the country at the mouth of the Perdido was unhealthy.

By order of the French government M. Iberville attempts a settlement in the vicinity of the mines (probably the same before alluded to, situated 600 miles above the mouth of the Illinois) and fort L'Huiller, at the mouth of Blue River, said to be in lat. 44°, 13′, N. was built. The site of this fort has never been discovered by modern travellers, and it is so vaguely described that its locality cannot be identified with any particular point on the Mississippi. They were compelled by the Indians to abandon this post within a year after its establishment. They afterwards located themselves at the mouth of a small river, about 100 miles above prairie du Chien, and built another fort. But so great was the hostility of the Indians to any establishment of the kind, that the French were soon induced to abandon this part of the country.

St. Augustine is attacked by the English and Indians under Gov. Moore of Carolina, and withstands a siege of three months.

A French settlement is formed on the Washita. Also another French settlement, together with a mission, is established on the Yazoo river. 1703.

M. d'Iberville's colony, from excessive indolence which was succeeded by want and starvation, was reduced to one hundred and fifty persons. Upwards of sixty persons perished with hunger, during the short administration of this governour. This defection however is attributable in a great measure to the mistaken policy and bad management of the French Government, who reserved to themselves the power of devising colonial measures, not even excepting those of a local and sumptuary nature. 1708.

The Missouri river is explored by the French to the mouth of the Konzes.

About this time an attempt is made by the English to wrest Louisiana from the possession of France. Several armed British vessels arrived in the Mississippi for that purpose, but supposing that this river was still farther to the west, no hostilities were then committed. Shortly after, they landed at Dauphin Island, and plundered the inhabitants of property to the amount of about fifty thousand livres.

During the last fifteen years the number of settlers from France, that were added to the colony of Louisiana, amounted to about two thousand five hundred persons: and the publick money expended on the colony during the same period, was no less than six hundred and eighty-nine thousand livres. Yet the colony contained at this time only four hundred whites, twenty negro slaves and three hundred head of cattle. 1712.

The commerce of Louisiana is granted to Crozat by letters patent from the king of France, Louis XIV.

M. de La Motte, first Governor under Crozat's grant, enters upon the duties of his office. Commerce is interdicted between the French and Spanish colonies. 1713.

The northern boundary of Louisiana, agreeably to the treaty of Utrecht, is fixed at the 49th deg. of N. latitude.

St. Dennis establishes a port at Natchitoches and explores the country westward to the Rio del Norte, where he finds a Spanish mission established on the west of that river 1714.

called Fort St. John Baptist. The Spaniards had already erected the province of Texas without ever having settled any part of it. In order to defeat this project of the Spaniards, the French built Fort Dont near the source of Sabine River. Another fort is also built by the French about thirty miles westward of Nacogdoches in the country of the Assinais Indians.

1716. Natchez is settled by the French and Fort Rosalie built for their protection. M. de La Motte dies and is succeeded in the government of Louisiana by M. Bienville.

1717. A Spanish mission is conducted from Fort St. John Baptist to the Assinais. The French Governor, La Motte, had assented to this measure as a preliminary step towards a revival of commercial intercourse between the French and Spanish colonies which had been interdicted for some time past very much to the disadvantage of the former. This is the first time the Spanish ever gained footing eastward of the Del Norte with the exception of their having the wretched remains of La Salle's colony from the bay of St. Bernard. Every step taken by the Spaniards to get possession of this part of the country, appears characterized by the most deliberate intrigue and duplicity.

Crozat having been in possession of Louisiana five years, during which he had expended four hundred and twenty-five thousand livres while the whole trade of the province yielded him only three hundred thousand livres, relinquishes his patent to the Mississippi or West Company projected and formed by the celebrated John Law. At this time the French inhabitants of Louisiana amounted to seven hundred persons only. But under the auspices of this company the affairs of the province soon assumed a more flattering aspect. In the course of the first six years subsequent to the transfer more than four thousand French settlers were added to the colony besides one hundred and fifty galley slaves and several hundred females taken from the charity and correction houses. During the same period one thousand four hundred and forty-one Africans were landed in Louisiana. This increase of population not having been accompanied with a proportional enlargement of the means of subsistence, involved the whole colony in the deepest distress, so that hundreds perished with hunger.

France declares war against Spain in the month of March. Pensacola is captured by the French and Indians under Bienville, and is recaptured by the Spanish in August following, their flotilla having arrived in the harbour. In the same month an attack is made by the flotilla on the garrison upon Dauphin Island which is vigorously defended by M. Bienville until he is relieved from the investment by the unexpected arrival of a French squadron. Pensacola is again recaptured by the French, the fortifications destroyed and the town laid in ashes. 1719

A fort is erected by the French at the Bay of St. Joseph. Fort St. Louis de Carloretti, situated on Red River in N. lat. 33° 55′, is built by M. de La Harpe by order of Bienville.

New Orleans is founded about this time and soon becomes the seat of government for Louisiana. Fort Chartres, on the east side of the Mississippi several miles above Kaskaskia, is built by the French. The French settlements are more widely diffused over the country and the attention of the inhabitants directed to the pursuits of agriculture. 1720.

An expedition is fitted out from Santa Fe for the purpose of establishing a colony on the Missouri in the country then occupied by the nation of the Missouris. The whole party were massacred by the Indians with the exception of a priest who made his escape on horseback. Soon after this occurrence the French, under M. de Burgmont, occupy an island in the Missouri (of which no traces now remain,) supposed to have been a few miles above the mouth of Grand River, and built Fort Orleans.

The Spanish form an establishment at the Adaize about fifteen miles westward of Natchitoches within the territory claimed by France.

M. de La Harpe is despatched with an armed force to explore the Bay of St. Bernard. On its shore he planted the arms of France and took formal possession of the country. He attempts to form an establishment on the bay, but fails of success through the hostility of the Indians. 1721.

The Spaniards regain possession of Pensacola by the truce, and from this time the Perdido is considered as the boundary between the French and Spanish possessions on the Atlantick coast. 1722.

The expenditures of the Mississippi Company during this year, amount to one million one hundred and sixty three thousand two hundred and fifty-six livres.

A fort erected by the French on Yazoo River, is destroyed by the Chickasaws.

The French form settlements and build a fort at Baton Rouge.

1723. An old warrior of the Natchez nation is wantonly shot by one of the French soldiers at Fort Rosalie, and no further notice is taken of the outrage by the commanding officer than merely to reprimand the perpetrator of the deed. Previously to this occurrence the Natchez had rendered the French every kind office in their power. Their friendship and generosity had even rescued many of the French from famine and death. They now commenced hostilities against the French and would have completely exterminated the colonists of that part of the country but for the timely interposition of an influential Chief who had been prevailed upon by the French to dissuade the Indians from a further prosecution of the war. Peace was accordingly re-established with upright intentions and the purest motives on the part of the Indians, but on that of the French with the view of gaining strength sufficient to crush and extirpate that innocent people at a blow. It is not a little surprising that Bienville, then Commandant General of Louisiana, who had ever been conspicuous for integrity and humanity, should have connived at this barbarous policy of his countrymen. Although he had ratified the treaty, he very soon marched to Fort Rosalie at the head of seven hundred men, attacked the unsuspecting and defenceless Indians and slaughtered them in their huts. This wanton waste of human blood lasted four days. The French deservedly lost forever the confidence of these truly generous Indians.

1724. Fort Orleans (situated on an island of the Missouri river) is destroyed by the Indians, and all the French stationed at it are massacred: but the perpetrators of this bloody deed were never discovered.

1729. M. de Chopart, commandant of fort Rosalia, out of mere spite against the Indians, ordered them to remove from their village (twelve miles below the present site of Natches) under the pretence that he wished to build a town on the same

site. The Indians prevailed on him to let them remain in their houses till after the ensuing harvest, on condition that each hut should pay him a fowl and a basket of corn. At the time appointed for the payment of this tribute, which was the last of November, the Indians having previously concerted their plan with wonderful secrecy, seized upon the fort, which fell into their hands with very little opposition. M. Chopart fell by the hand of one of the meanest of the Indians, the chiefs disdaining to stain their hands with his blood. The number of the French slain on this occasion was nearly seven hundred. The forts and settlements on the Yazoo and Washita shared the same fate, and so great was the carnage that scarcely a Frenchman escaped to tell the news.

The French aided by the Cherokees regain possession of the Natchez, who elude the fury of their enemies by a retreat upon the Mississippi, managed with astonishing secrecy and dispatch. They were shortly afterwards pursued by M. Perier at the head of a considerable force, overtaken at a fort they had erected for their defence on Red river about 180 miles from its mouth, and finally put to the sword or taken prisoners and reduced to slavery. Thus the Natchez, the most polished, civilized and humane of all the savage nations of North America, become extinct as a nation through the injustice and wanton rapacity of the French, who were bound in gratitude to show them every mark of friendship and forbearance. The extirpation of these inoffensive natives equals in character, though not in extent, the most wanton barbarities committed by the Spaniards upon the innocent aborigines of the western continent. 1730.

A deputation of Choctaws is sent to England, presented to the king, and acknowledge themselves and their nation as subjects of his dominion. With the exception of the Choctaws and Chickasaws, the Indians generally on the Mississippi were friends of the French.

Settlements are formed by the French in the country of the Yatasses, about this period, under the patronage of M. Verge, to whom was granted the exclusive privilege of trading with the Indians in that quarter.

Settlements are also made by the French on Bayou Pierre about this time.

The charter of the Mississippi or West company is resigned to the crown of France. 1731.

1736. The French under M. Bienville commence hostilities against the Chickasaws, and make an unsuccessful attack upon their fort situated upon Mobile river.

1739. M. Bienville leads another army of French and Indians, the largest ever assembled in Louisiana since it became a French province, against the Chickasaws, lands at the mouth of Margot river, and builds fort Assumption.

1740. Bienville having suffered his army to remain encamped till their supplies were nearly exhausted, is induced to offer peace to the Chickasaws, and leaves them in quiet possession of the country.

St. Augustine is attacked by a formidable armament under Gen. Oglethorpe, but their attempts to reduce it prove ineffectual.

1747. The boundaries between the possessions of the English and French in America, begin to be a subject of controversy. The former claim the country south of the St. Lawrence and westward nearly to the Mississippi, while the latter pretend to claim the country generally along the St. Lawrence lakes, &c. and especially to that westward of the Apalachian or Allegheny mountains.

1749. The Ohio is explored by the French. The Ohio Company is formed about this time by English traders with the view of engrossing the Indian trade of the Ohio river. A considerable tract of land on that river was granted them without the consent of the Indians, which served greatly to irritate the latter. The French taking advantage of the disposition of the Indians, seized on the English traders, confiscated their property, and compelled the company to abandon their project.

1753. Measures are taken by the French to enforce their claims to various parts of the country and to prevent them from being any longer contested by the English. About this time forts are constructed by the French at Crown Point, Niagara, Riviere au Bœuf, and at the junction of the Monongahela and Allegheny rivers. The chain of posts along the lakes and the Mississippi is also strengthened by the addition of new works, and improvements are made upon others already established.

The English, viewing the operations of the French of the preceding year as infringements upon their rights, were resolved to counteract them. Orders are accordingly despatched to the Governors of the British provinces, directing them to resort to force in defence of their rights and to expel the French from their station on the Ohio. The illustrious Washington now commenced his military career with the rank of Colonel. In the mean time French troops are sent to Canada and the posts in that province, as also in Louisiana, are put in the best possible state of defence. 1754.

General Braddock marches against Fort du Quesne, (afterwards Fort Pitt,) situated at the head of the Ohio river—is drawn into an ambuscade a few miles from the fort—is slain and his army defeated, seven hundred lives having been lost in the conflict.———The French garrison of Fort Edward, commanded by Baron Dieskan, is defeated by the English. 1755.

Under the administration of the celebrated William Pitt the war in America was prosecuted with vigour though at first with little means on the side of the English. Fort William Henry, on Lake George, is reduced by the French. The troops were permitted to march out with the honours of war, but were immediately afterwards attacked by the savages and many of them inhumanly butchered. 1757.

Cape Breton is conquered by the English. Cadaraqua and Fort du Quesne are also taken by them. The English are defeated near Tyconderoga where Lord Howe is slain. 1758.

Tyconderoga and Crown Point are abandoned by the French who are reduced to the necessity of concentrating their forces at Quebec for the defence of that place. The memorable conflict on the plains of Abraham soon followed which decided the fate of the French possessions in North America. Quebec fell into the hands of the English, and its fall drew after it the cession of Louisiana. 1759.

By the instigation of the French of Louisiana the Cherokees inhumanly massacred the English traders and settlers resident among them: whereupon a force of about twelve hundred men, from South Carolina, marched against the Indians, laid waste their towns, and destroyed their provisions. The Indians reassembled, laid siege to Fort London, and obliged the garrison to capitulate. 1760.

1762. France cedes to Spain all her possessions west of the Mississippi, including the island and city of New Orleans, on the third of November.

The villages of St. Genevieve, St. Michaels, and New Bourbon are founded about this period.

1763. The treaty is concluded between Great Britain and France on the 10th of February, by which the latter cedes to the former all her possessions east of the Mississippi, including the Canadas. Spain is also a party to the same treaty and cedes the Floridas to Great Britain. Prior to this period the whole country bounded on the east by the lakes and the Allegheny mountains and on the west by the Mexican mountains and extending from the Gulf of Mexico northwardly to the sources of the Mississippi, had obtained the general name of Louisiana; but subsequently the name was confined to that only situated on the west side of that river and ceded to Spain.

1764. M. D'Abbadie, as director general and commandant of Louisiana, is instructed to give up to the officers of Spain the country and colony of Louisiana, together with the city of New Orleans, and all the military posts of the ceded country.

The English take possession of Florida, pursuant to the treaty of the year preceding. A regiment on its way up the Mississippi to Natchez, is entirely defeated by the Tunicas at the heights now called Loftus, in commemmoration of Major Loftus who fell in that action.

St. Louis is founded by Pierre Laclade, Maxan and Company, a trading association.

1766. Don Ulloa arrives with a detachment of Spanish troops and demands possession of the country, but is resisted by the French inhabitants, on the ground that a transfer without their consent was unjust. The Spaniards were compelled to return to the Havanna, without having accomplished their purpose.

1769. O'Reily, the first Spanish Governor and Intendant General, takes peaceable possession of the colony. He selects twelve of the leaders of the party opposed to the transfer, six of whom are immediately hung and the remainining six doomed to the dungeons of Cuba.

1770. The Spanish authorities are established in Upper Louisiana.

Fort Chartres is abandoned by the English, by reason of its having been undermined by the Mississippi and a considerable portion of it demolished. 1772.

The English fort at Baton Rouge, is attacked by the Spanish General Galvez, at the head of about 2300 men, and forced to capitulate. The Fortress at Natchez is also included in the same capitulation. 1779.

Galvez attacks the English at Mobile, forces them to surrender, and the English gain quiet possession of the place. 1780.

St. Louis, the capital of Upper Louisiana, is attacked by a military force from Michilimakinak, composed of about 1500 Indians and 140 English, which immediately dispersed on the appearance of General Clark with a respectable force on the opposite side of the river.

St. Charles on the Missouri river, is founded by the French.

Pensacola is captured by the Spaniards under General Galvez after an obstinate battle. The capitulation, signed on the 9th of May, provides for the surrender of the whole of West Florida to the Spanish. 1781.

Great Britain cedes East Florida and guarantees West Florida to the crown of Spain, and at the same time cedes to the United States the country north of the 31st deg. of N. Latitude. 1783.

A convention assembles at Danville, Kentucky, to deliberate on the propriety of forming a new state west of the Alleghenies, but a majority of the members declared against the measure. 1785.

The town of New Madrid is founded by General Morgan from New Jersey. Its site had been previously occupied by French traders. 1787.

Another convention is formed in Kentucky, for the purpose of adopting measures in relation to the navigation of the Mississippi, which had been prohibited to the citizens of the U. States by the Spanish government. A petition is presented to congress and a redress of grievances demanded. Whilst the subject of the Mississippi navigation was agitated, the Spanish, English, and French, in their turns, employed every artifice in their power, even resorting to bribes as well as persuasions, to induce the people of Kentucky and Ohio to abandon the confederation of the States and place themselves under their 1788.

protection and patronage. Yet, notwithstanding the privations imposed upon them for want of sufficient authority in the U. States to secure to them the free navigation of the Mississippi, almost the only outlet for their surplus produce, the people of the West still adhered to the Union, and the efforts of foreign emissaries were rendered completely abortive.

1794. Cape Girardeau is first settled by a Frenchman. The Delaware and Shawney Indians establish villages in the neighbourhood of Apple Creek about twenty miles from its mouth.

1795. A treaty is concluded between the United States and Spain, by which the former is allowed the free navigation of the Mississippi, and the line of demarkation between their respective territories on that river is fixed at the 37st deg. of N. latitude.

Little Prairie, thirty miles below New Madrid, is settled by Canadian traders.

1798. The Spanish posts on the east of the Mississippi and northwardly of the 31st deg. of N. latitude, are evacuated in the early part of the summer. This was one of the measures contemplated in the treaty of 1795, and the United States had a right to expect its adoption at a much earlier period. But the Spanish Government, loth to relinquish their controul over the navigation of the Mississippi and anxious not only to retain the possessions they had already acquired, but also to augment them by seducing the population west of the Alleghenies from their allegiance to the United States, resorted to every expedient within their grasp and urged a variety of frivolous objections in order to retard the execution of the treaty.

1799. A Department of Finance is erected in Louisiana as an appendage of the civil government, previously to which the supreme power of the province, both military and civil under the crown, had been delegated exclusively to the Governor and Intendant General.

The demarkation of the boundary between the United States and the Floridas, was commenced in the year preceding and is completed in March. This line passes eastward on the 31st parallel of latitude from the Mississippi to the Chattahoola, thence down this river to its confluence with Flint river,

thence eastwardly to the source of the St. Mary's, and thence following the meanders of the river to the ocean.

The Gulf of Mexico is said to have been accurately surveyed and a chart of it made by order of the king of Spain, embracing the whole of the sea coast between the 18th deg. of N. latitude and the river St. Mary's in Georgia and twelve degrees of longitude.

Louisiana is retroceded to France in March. The French make preparations to take possession of the country, and an army of 25,000 men embark for that purpose; but the fleet designed to transport them is blockaded by the English in the ports of Holland. 1801.

By treaty bearing date April 30th, the French cede Louisiana to the United States. The transfer of Lower Louisiana is made at New Orleans in December and that of Upper Louisiana at St. Louis in March following, 1804.* 1803.

ARTICLE XI.

MISCELLANEOUS.

FROM FOREIGN JOURNALS.

Cold affusion in the treatment of Poisoning from Opium.

THE following interesting cases illustrating the efficacy of cold affusion in the treatment of poisoning from opium, are reported by S. Wray, Esq.†

Case 1.—I was called, early in January, 1821, to Mrs. E——, who had, half an hour before, taken about two ounces of laudanum. I found her in bed, in a state of profound stupor. Her pulse was much quicker than natural; her pupils were dilated. Every means which could be suggested at the time were employed to rouse her from her lethargy, but without effect. Under such circumstances, no internal remedies could be administered. I afterwards had recourse to cold affusion, which produced the most decided benefit. A large bucketful of cold spring water was brought into the room, and a quart

*See Stoddard's Sketches of Louisiana.

† London Medical Repository for July, 1822.

basinful was forcibly thrown on the head and chest. It roused her on the first application, but immediately afterwards she relapsed into the same state of stupor. By resorting repeatedly to the same means, in about ten minutes I had the satisfaction of hearing her speak. An emetick was then administered which operated freely. Vinegar and water were given afterwards, and on the least tendency to drowsiness the cold affusion was repeated. I had the gratification, the following day, of seeing this lady perfectly restored.

Case 2.—April 17, 1821. A gentleman residing in the vicinity of Chancery-lane, took two ounces and a half of laudanum, in a fit of desperation, on account of some losses he had sustained. Immediately after taking it he became sensible of his folly, and informed the waiter of the coffee-house, where he was at the time, of the circumstance, who immediately sent for a medical gentleman. An emetick was immediately administered, and, after its slight operation, he was put into a hackney-coach, and driven to Fleet-street, where he had given his address. The coachman, on opening the door, found him lying at the bottom of the coach, in a state of perfect stupor, from which he could not be roused. He was taken in this state to the watch-house, where he was recognized, and thence conveyed to his own house; when another medical man and myself were sent for. That gentleman, having arrived some time before me, had employed the usual means in order to rouse him from the state of coma into which he had sunk. Every attempt produced merely a momentary effect; when left alone, he dropt into his former condition. As soon as I arrived, I requested that the cold affusion to the head and chest might be tried. A few applications of it in a similar manner as in the former case, had the effect of removing completely the profound stupor, and the other alarming symptoms which were present. He complained, the following day, of headach and pain in the epigastrick region: the former arising, most probably, from the effects of the opium on the nervous system; the latter from the irritation induced by the strong emeticks administered in order to produce full vomiting. These symptoms soon yielded to bleeding and other antiphlogistick means.

Case 3.—On the night of May 12, 1822, I was called to Mrs. W—, Whitefriars, an extremely delicate young woman, about

twenty-five years of age, who, at half past ten, had taken two ounces of laudanum, with the intention of destroying herself. Having been at that time particularly engaged, I sent my assistant, with directions to employ the cold affusion, and to administer an emetick as soon as deglutition might be accomplished. If the symptoms were very alarming, he was also instructed to send for me. Immediately after his arrival, I was again sent for, at his request. On entering the room, he acquainted me that he had considered it too late to do any thing, and therefore had not attempted it. She appeared, in fact, when I arrived, nearly dead. During the preparation for the cold effusion, I endeavoured to rouse her by various external means of irritation, but with no effect. The pupils were dilated, and quite insensible to the light from a candle that was presented close to them. The pulse could occasionally be felt in slight undulations, and the body possessed a considerable degree of warmth. The head and chest were raised, and I began by throwing a large basinful of cold water forcibly on the head, which produced an evident twitching in the muscles of the face. By repeating these means, at intervals of some seconds only, she uttered a lamentable scream, much resembling that of a person recovering from suspended animation by immersion. After a few more applications of the affusion, a very strong emetick was administered, with considerable difficulty; but it was no sooner taken than she relapsed into the same state of inanimation, from which she was only restored by the frequent and forcible dashing of the cold water on the head and chest. She was afterwards raised from the bed, and carried up and down the room between two persons, with nothing on but a chemise, and, by the repeated employment of the affusion, she might be said to have been in a continued shower-bath. In about half an hour from the exhibition of the emetick, it began to operate slightly. The ejected matters smelt strongly of laudanum. The vomiting was promoted by warm water and an additional emetick. After the stomach had been emptied, vinegar and water were freely administered. Notwithstandiug these means had been used, she frequently relapsed into a state of syncope, from which she could only be roused by a fresh affusion. In about three hours from the commencement of the treatment, the pulse ac-

quired greater force, and her appearance altogether showed an evident return of the powers of life. By constant attention, during six hours, to the means already employed, whenever they appeared requisite, I had the satisfaction to see her sufficiently restored to allow her, with perfect safety, a few hours of repose. She only suffered a little from debility, during two or three days.

Remarks.—The first time my attention was drawn to the use of the cold affusion in states of the system analogous to that which results from the immoderate ingestion of opium, was shortly before the occurrence of the case first related, when called to a patient in furious delirium, brought on by gin-drinking; and, as there was no possibility of taking away blood or administering internal remedies, I had recourse to the cold affusion, from a full conviction that the derangement was caused by a greater determination of arterial blood to the head, than could at once be carried to the veins, or returned by the lateral sinuses. Believing, also, that a continuance of this state will produce a distension of the capillary vessels in the brain, almost incompatible with life, owing to their delicate texture, and to the softness of the substance of the brain itself, I conceived the best plan to be employed was that which tends to prevent or overcome that distension.

From the well known power that cold possesses of diminishing arterial action, and of producing constriction of vessels, I was led to its use in that case; and the effects which immediately followed its adoption exceeded my expectation.

The successful employment of the cold affusion in this case of extreme intoxication from a spirituous liquor, suggested its use in the treatment of poisoning from opium. The analogy between the one and the other I considered to be very close; the difference, in my opinion, consisting chiefly in the greater diffusibility of the latter agent, which would give rise to a more alarming degree of congestion of blood in the vessels of the head, after its primary effects had disappeared, than usually follows the ingurgitation of the former agent. The peculiar operation of opium upon the nervous system may also tend to produce a very different effect to that arising from the diffusible stimulants, when taken in an inordinate dose. This specifick influence of opium, as well as its more common operation,

I consider to be altogether destroyed by the shock made upon the system by the cold affusion; and the extreme vessels become, in consequence of its constringing effects, roused to a healthy and tonick state of action. The event of the three foregoing cases, sufficiently proves the efficacy of the cold affusion, in removing the noxious effects of this powerful agent. I have contented myself with giving an outline of their more prominent features. They are the only cases which have come under my observation since the mode of practice was suggested to my mind, in the manner I have mentioned; and although they are few, still they are most important, from their uniformly successful issue. The last case more especially evinced the surprising effect of this remedial agent; for, to a superficial inspection, dissolution had apparently taken place, before any means of restoration were employed.

Medicinal effects of Elm bark.—Mr. Henry Jeffreys, surgeon to St. George's and St. James's Dispensary, has published some observations illustrative of the good effects of elm bark, as a substitute for sarsaparilla.*

The effects of elm bark in cutaneous diseases have been extolled by several writers, particularly the late Dr. Lettsom, and Dr. Daniel Lysons, of the Gloucester Infirmary. Mr. Jeffreys has given it an extensive trial at the dispensary, and speaks highly of its virtues. The following is the formula.

"DECOCTUM ULMI COMPOSITUM.

"R. Decocti Ulmi (P. L.) ferventis oc. viij;
Sassafras Radicis Concisæ,
Guaiaci Ligni Rasi, sing. ℥j;
Mezer. Rad. Corticis ℥iij;
Glycyrrhizæ Rad. Contusæ ℥j.
Decoque per horam, sepone, et cola.

"This decoction, when properly prepared, and strained off, is of a clear brown colour, not unpleasant in its taste, and contains a considerable proportion of amylacious and mucilaginous matter. Administered in the quantity of a pint a day, it appears to increase the insensible perspiration, to restore the appetite, improve the tone and powers of the digestive organs, to strengthen and invigorate the general system, and to cheer

* Cases in Surgery, &c. by Henry Jeffreys, Esq. London, 1820.

and compose the animal spirits. Like the decoctions of the woods in general, its action may be said to be alterative and tonick; and its use may be persisted in for a considerable length of time, without overloading and oppressing the stomach or producing any other unpleasant symptom. Its action upon the bowels has, in general, a tendency to produce constipation rather than otherwise."

Our author has administered this decoction, both alone and in conjunction with other medicines, as antimonials, liquor potassæ, liquor arsenicalis, oxymuriate of mercury, the mineral acids, &c. in a considerable number of cases. The complaints in which he has found it most serviceable, were those which very frequently follow venereal ulcers on the genitals, when mercury has been improperly or inefficiently exhibited—as nodes, and painful tumefactions of the periosteum and ligaments, oxœna, cutaneous defœdations, foul and untractable ulcers, scrophulous abcesses, chronick rheumatism, morbid enlargements and ineuration of the testicles, &c.

Med. Chir. Review, Dec. 1822.

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*Cancer of the Lip.**—M. Richerand proposes (founded on experience) a new mode of extirpating cancers of the lips. It is needless to observe that the common method is to cut out a triangular piece of lip including the disease, and endeavour to unite the cut edges by means of pins or sutures. There is often considerable pain in the process of keeping the divided parts in contact, especially where a large proportion of lip has been removed, and after all we cannot avoid deformity in many instances. M. Richerand now removes the carcinomatous portion of lip with scissors curved on their *flat* sides, and rather short in their blades. The operation is very quickly performed in this way; but it is in the after-management that the novelty or improvement lies. Instead of bringing the parts in contact by pins or sutures, the bleeding vessels are tied, and a piece of agarick is laid on the raw surface, over which lint and a bandage are placed. On removing the dressings the third or fourth day, suppuration will be found established in the wound; and from this time the mucous membrane of the

* Nouveau Procede pour l'Extirpation des Cancers aux Levres.' Par M. Richerand. Annuire Med. Chir.

mouth and the external skin of the lip daily approximate till, in ten or twelve days, they are united in a line, with scarcely any deformity—especially if care has been taken to cut out the piece in the form of a long crescent. M. Richerand called in, to witness the success of this operation, Drs. Beclard, Ribes, Breschet, and J. Cloquet, at the St. Louis Hospital. The patient was a female, and it was necessary to remove the whole of the under lip (j'avais enlevé la totalité de la lévre inferieure) from one angle of the mouth to the other. Yet in this case the removal was scarcely perceptible in a fortnight. When the parts were first removed, the aspect of the patient was hideous, and a person who had not known how far Nature could operate in the reproduction of lip, would have said that the patient would never afterwards be able to retain the saliva. In this case the lip was incised below the level of the floating portion—that is, below the angle which the mucous membrane makes in turning from the lip to go up on the gums. At every dressing the lip was seen more elevated, till at length it not only covered the gums, but rose above the level of the teeth. The patient perfectly recovered, and no deformity was the consequence.

We could not suppose that M. Richerand would deceive us, but when such men as Beclard and Breschet are witnesses of the fact, no rational doubt can be entertained.

Medico-Chirurgical Review, Sept. 1822.

Medicinal powers of Oil of Turpentine.—Some interesting remarks have been published by Mr. Money, on the use of Oil of Turpentine. His observations are selected from clinical notes kept at the Northampton Hospital, from 1811 to 1816, and which comprise the histories of many cases. It was used in a variety of diseases, and proved beneficial in all, *except one*. The results given by Mr. M. are as follow:

"By the small doses, (as half a drachm, and less, taken repeatedly in the day,) obstinate chronick rheumatick pains have been removed.

"By doses of one or two drachms, twice, thrice, or four times a day, cures have been accomplished in adults labouring for two years under epileptick fits.

"In doses of six drachms every other morning, and continued

for six weeks, children at the age of twelve years have been roused from a cloudiness of intellect, bordering upon idiotism of the melancholick kind.

"As a vermifuge, it has been given to the extent of one, two, three, and four ounces for a dose, the patient fasting; and its beneficial operation has not been confined to the tape-worm, but all the species of worms have been alike expelled.

"In cases where several anomalous symptoms existed,—such as pain in the region of the stomach, distension of the abdomen, irregular bowels, slight, but irregular paroxysms of fever, wandering pains, pulse full, and disinclination to labour, without any emaciation;—in these cases, in doses of two, three, or four ounces, taken fasting in the morning, it has produced the speediest and best effects."

Dr. GIBNEY has also recommended its employment in more liberal doses than practitioners have been accustomed to. "There are few children of three years of age who will not bear from one to three drachms, given at intervals." He advises it to be given on an empty stomach, as little combined as possible with other remedies, and repeated at intervals of about an hour, for two or three times in succession, or according to circumstances: if its operation be delayed, a dose of castor-oil is recommended. This remedy also continues to have advocates for its exhibition in puerperal fever.

Lond. Med. and Phys. Journal, Jan. 1823.

On a new Mode for the Cure of Prolapsus Ani. By M. DUPUYTREN.—M. Dupuytren having frequently had occasion to remark the inefficacy of the plans adopted for the cure of persons labouring under prolapsus ani, hit upon a mode of cure which he considers as one of the most important inventions in surgery of which he has been the author. This operation consists merely "in cutting off a greater or less number of the cutaneous and projecting folds of the verge of the anus: the operation contracts the opening, by drawing it together almost in the same manner as occurs in a purse when the strings are drawn tight." The number of folds which M. Dupuytren removes is proportioned to the size of the protuded intestine and dilatation of the anus. Ten or twelve patients have been

treated by this method, and all have been cured without any unpleasant symptoms of relapse.

Should an artery be opened during the operation, M. Dupuytren immediately cauterizes it. No dressing is required, attention to cleanliness being commonly sufficient to produce the cicatrization of the wounds and the complete cure of the patients, in less than twelve or fifteen days.

Journal Universel des Sciences Medicales, Octobre, 1822.

Cubebs in Chronick Inflammation of Mucous Surfaces. By J. Fosbroke, Esq.—The case of inflammation of the mucous coat of the intestinal canal, which was treated with cubebs, and some time afterwards published in the Repository, has been succeeded by others in which this remedy was prescribed with uniform success. These cases presented the various species of derangement, from the common symptoms of functional disorder of the digestive tube to sub-acute or chronick inflammation of the villous tunick, seated more or less in particular portions of it, or extending in a greater or less degree along its whole surface.

In a very obstinate case, occurring in a young woman of a cachectick habit, who had twice been reduced nearly to dissolution by chronick inflammation of the villous coat of the intestines, enlargement of the mesenterick glands, and symptomatick cough, with defective menstruation and dysuria, the cubebs were given, combined with bismuth, and leeches were applied to the abdomen: she recovered perfectly under this treatment.

While at Edinburgh, last winter, a case of chronick inflammation of the œsophagus, attended with dysphagia and increasing stricture, came under my care. It had been for about twelve months treated in vain by bleeding, blisters, &c. by individuals of the first and most deserved eminence. It yielded, in a few weeks, to cubebs, combined with the subcarb. of soda, and to the external application of the tartar emetick ointment.

In inflammation of the mucous coat of the intestines, especially where it fails when given alone, I have always succeeded by combining it with Cayenne pepper, or with balsam of copaiba.—*Lond. Med. Repos. Dec.* 1822.

Evolution of Heat by Moistening.—"Some new phenomena connected with Heat have been discovered by M. Pouillet.* Having been struck with the developement of electricity, and of the relation which subsists between the electrick properties of a body and those of its elements, he was induced to examine the compounds of which water forms a part, whether as an essential element in a fixed proportion, or as an accidental expedient in variable quantity. Numerous experiments, made on simple bodies, as oxides, and more compound substances, (as glass, porcelain, and clay,) have led him to the conclusion, that calorick is disengaged at the moment when a solid is moistened by a liquid. This circumstance, if it shall be proved to exist as a general law, is obviously one of extensive application, and calculated to explain many phenomena, the nature of which has hitherto escaped the detection of the most acute philosophers. The act of moistening is one of constant occurence: the rain which falls on the earth moistens its surface and the subjacent strata; vegetables have a source of heat in the same cause; and in the animal body, where various fluids are in constant circulation, the act of moistening is carried on at every moment, whether these fluids simply pass along the sides of the vessels, or pass through them by exhalation or absorption.

The quantity of calorick disengaged in the act of moistening, as shown by the experiments of M. Pouillet, is small, as indeed might be expected from the fact having hitherto escaped observation. This, however, does not lessen the importance of the discovery: for, in the physical world, the greatest natural causes are not those which act on matter with the greatest violence, but those whose operation is the most universal and the most constant.

The quantity of calorick disengaged being so small, requires extreme sensibility in a thermometer capable of measuring it; and, after trying the calorimeters of Leslie and Count Rumford, M. Pouillet invented a mercurial thermometer, so minute in its divisions as to mark the hundredth part of a degree of the centigrade. Furnished with an instrument of this delicacy, he was able to establish that, when a piece of glass was moistened with water, calorick was evolved at the point of contact, which communicated itself from this point to the glass on the

* Annales de Chimie et de Physique, tom. xx.

one hand, and to the water on the other. But, by diminishing the number of the superfluous particles, which were heated at the expense of the others, and augmenting the proportion of surface brought into contact, he was able proportionally to increase the degree of heat. Thus, if, without changing the mass, he gave it a surface an hundred times more extended, it disengaged, when moistened, an hundred times more calorick. It is necessary, in order to render these experiments successful, that the proportion of the mass to the surface be kept in view; because, where the surface is not extended sufficiently, the disengaged heat is taken up by the mass so rapidly as to prevent it from becoming sensible. Thus, if a thick piece of glass be moistened, no effect is perceptible; but, if a very thin plate be used, the thermometer indicates a very sensible increase of heat. Another state in which bodies are capable of indicating these phenomena, is that of fine powder, by which the capillary attraction for the fluid is favoured, and the surface of contact extended. In this manner various metals, oxides, earths, and compound bodies, were used: the liquids were distilled water, oil, alcohol, acetick æther, and volatile oil of turpentine. The same general result presented itself,—viz, increased temperature, varying from one-fifth to one-half a degree of the centigrade thermometer; the elevation being nearly the same from different solids with the same liquid, and the same solid with different liquids."—*Lond. Med. and Phys. Jour. Jan.* 1823.

Some experiments have been made by M. Vauquelin on the combination of acetick acid and alcohol with volatile oils.* Various proportions of the above acid and volatile oils were placed together in phials and shaken, by which their union was effected; and it was found that, when the acetick acid is pure, the oil can absorb it entirely; but if it contain any water, though not exceeding five per cent., a part will remain, which the oil cannot take up, so that the remaining acid, which does not enter into the combination, contains necessarily a greater proportion of water than vinegar before the process. These experiments agree with the facts already known of vinegar becoming impregnated with the odour of plants.

From similar experiments it was found that one hundred

* Annales de Chimie, Mars, 1822.

parts of volatile oil of turpentine, mixed with twenty parts of alcohol, formed a homogenous fluid, which did not separate on being left to settle. This mixture, or rather solution, is not disturbed by water; but, when poured into water and gently shaken, a portion of the alcohol detatches itself and unites with the water, forming distinct streaks.—*Ib.*

AMERICAN INTELLIGENCE.

WE are obliged to a friend for giving us an opportunity of publishing the following letter which is one of several, giving a sketch of the University of Pennsylvania; as they are by no means dependent on each other, we offer this first, because it is the most convenient, hoping to present the others on a future occasion. They are written by a gentleman attending lectures in Philadelphia, to an intimate friend in the Western Country, on which account some allowances are to be made for the style, though the interesting character of the information conveyed, would with a majority of readers be sufficient to atone for greater defects than are to be found in this communication.

"*Philadelphia, Feb.* 12, 1823.

"DEAR W——,

"In this letter I resume my sketches, by presenting to your view some of the peculiarities of the Surgical chair of this school, which will be very proper after what I have said of the otners. In the beginning of the course, Professor Gibson gave us three or four written lectures on inflammation, which led me to fear that the whole course was to be delivered in the same way, and by consequence, that I should be very little interested by the lectures. My disappointment however, was of the most agreeable kind, when I afterwards found that he went through the whole course without having the slightest written memorial before him, and that his discourses flowed with a clearness, precision and energy, which can only be the result of a thorough acquaintance with his subject, as well as of a profound study of each particular topick discussed. His whole desire seems to be the conveyance of instruction, without allowing himself to wander in search of mere ornament, or striving to acquire pop-

ularity by making a display. The ease and propriety of his manner as a publick teacher give a lasting charm to his instructions, and the extreme attention he bestows on every thing that renders the subject clearer to the pupil, makes us all eager to catch every word offered for our consideration. There are some peculiarities in his mode of instruction which I will detail, as they are entirely original with him, and are so excellent that I have no doubt they will be speedily adopted by other teachers. The great number of them will give you a most convincing proof that he is ever trying to confer the greatest possible advantages on the class.

"In treating of gun-shot wounds, he illustrates all that is said by showing us the character of such injuries by shooting at the different parts of a subject, tracing the ball and exhibiting the peculiarities of the wound to the class. The superiority of this mode, over that of simply *talking* on the subject, is at once evident to all.

"He does not content himself with giving us abstract notions of *dislocations*, by merely shewing the dry bones displaced, but by having the joints opened and dividing the ligaments, he displaces the bones in the various ways that we know to result from accident. Thus it has very nearly the exact appearance that the real injury would present, and we understand with facility the operations necessary to reduction.

"In explaining the diseases of the eye, the class are assisted by highly magnified and beautifully coloured paintings, on a scale of two feet to each eye. The diseases of the antrum and nose are made plain by numerous drawings of the structure of the parts, as well as of the appearance of the diseases.

"The subject of hernia is elucidated by immensely magnified and splendid paintings in oil, made from dissections for the purpose. This renders the ideas of the student at once clear and correct, as at the same time the disease is *imitated* on the dead subject by forming the tumour and sack, and the operation exhibited for its reduction. In a similar manner hemorrhoids, fistula in ano, hydrocele, schirrus testicle, and diseases of the urethra, are all imitated on the subject, and explained by the aid of magnified paintings. *Lithotomy*, *amputation*, and in short every operation in surgery, is thus made plain to the class by a multitude of ingenious contrivances and at a very consid-

erable expense. As you have seen the splendid collection of wax models, made by professor Gibson himself, it is unnecessary to repeat to you, that they are beautifully correct and of great value to the student.

"There is one improvement of his, which deserves a particular mention, as it is of a very singular and highly instructive character. This is, the frequent introduction of the *living* subject on whom a great many operations are performed; such as washing out the stomach, as in cases of poisoning, by means of the gum elastick tube and syringe, the introduction of *Anel's* probe into the *puncta lacrimalia*, and of the catheter into the bladder, &c. all of which as they are to be performed on the living subject, are only to be understood when performed in this way. The class are under considerable obligations to this indefatigable teacher, for after giving us an opportunity of seeing him operate on private patients, others from the alms-house are frequently introduced to exhibit certain diseases, or their effects on the system.

"During the winter he delivers a course of Clinical Surgery, at the alms-house, where patients are brought into the area of the operating room, the peculiarities of their cases described, and operations performed when requisite. Sometimes they are brought in on their beds, which enables all the pupils to see, without subjecting the patient to the inconvenience of a crowd immediately around his bed. This plan is also his, and he deserves our gratitude for the steadiness of his exertions for our benefit. He has performed the operation of lithotomy, three times in the alms-house within a few months, with entire success; and in all we have seen upwards of *thirty* operations by him this winter. The class in attendance at the alms-house during this session, has been 250; heretofore it has never exceeded 60. It is not difficult to foresee that in succeeding winters this class will become very much larger.

"It strikes me that I have given you but a very hasty sketch of the peculiarities and advantages of this course, but you have enough to prepare you for appreciating the excellence of what you are to find here next winter. It is a fact that these things have not yet been done in any of the schools of Europe, and are only known in this country through the pupils of the University of Pennsylvnnia.

"I make no apologies for this, as you know the little time I have for writing.

"Ever your friend,

"N. H——.

"P. S. I almost forgot to answer your query about the price of boarding. I pay three dollars; but very comfortable and respectable boarding may be had for $2 or 2 50, at all times."

Inhalation of Sulphurick Ether—Physicians for more than 20 years have been accustomed to direct patients labouring under Pulmonary Consumption, Asthma, and other chronick affections of the lungs, to inhale the vapour of Ether as a palliative, but never as far as we know observed any exhiliting effects from it analagous to those produced by the Nitrous Oxide. It was however accidentally discovered, a few weeks since by Mr. Smead, a druggist of this city, that when inhaled by persons in health it produces effects not unlike that gas. His manner of administering it was to inflate a silk gas-holder by blowing into it, and then to pour in one or two drachms of the common Sulphurick Ether of the shops. By shaking this for a moment it would spread itself throughout the bag in an æriform state and was then inhaled through a tube. We shall not pretend to determine whether the gaseous ether may not in this way unite with or be decomposed by some of the products of respiration, since the gas-holder in every instance was filled with respired air; nor can we pretend to vouch for the exhilirating effects which have been ascribed to it by a great number of persons to whom it has been administered; that it has, however, produced on several young persons who have inhaled it, effects of an alarming nature would seem to be quite certain. For the following memorandums respecting these, we are indebted to Dr. Woolley, a respectable practitioner of this city.

"A young lady of this city, having a predisposition to pulmonary disease, about three weeks since, inhaled a portion of the Ethereal Gas, (as it is called,) which immediately produced violent muscular action and great exhiliration of spirits, which continued till she was quite exhausted and fell senseless on the floor. Upon reviving she was affected with a violent cough, appeared considerably deranged in mind, and complained of pain in her head and chest. After a short interval she had another fit or paroxysm similar to the first; and in two hours

from the first, a third, which was much the most violent. In this she lay apparently lifeless—her extremities were cold—her respiration hardly perceptible, and the pulsation of the radial artery scarcely to be perceived, while the temporal and carotid arteries beat strong and full. Sixteen ounces of blood were immediately drawn from the arm, and sinapisms applied to the epigastrium and ancles. After some time her animation increased and she became affected with cough and spasmodick action of the muscles of her arms, face, &c. She complained of pain in her head and chest, with great prostration of strength, but appeared perfectly rational. She has had a violent cough ever since and complains of general debility and weakness of the joints.

"I understand that several other young persons have been similarly affected by respiring the same gas. In one it produced a disposition to syncope for several days upon the slightest exertion. Others have had an incessant and peculiar pain in one side of the head for some time after; and in one young gentleman it produced the symptoms of a violent catarrh, such as hoarseness, cough, pain in the chest, and dyspnœa, which continued for many days."

Medical Jurisprudence.—Dr. T. R. Beck, of Albany, New York, is about to publish a systematick and comprehensive work on Forensick Medicine, for which he has, during many years, been engaged in the collection of facts. We doubt not that it will be an acceptable contribution to the libraries of the physician and advocate.

TRANSYLVANIA UNIVERSITY.

Daniel Drake, M. D. of this city, has been elected Professor of *Materia Medica* and *Medical Botany* in this institution; and Mr. Robert Best, Assistant to the Professor of *Chemistry*. They have both accepted their appointments and intend to remove to Lexington.

At a late commencement held in the University, the degree of Doctor of Medicine, was conferred on 48 young gentlemen, *alumni* of the institution; and the honorary degree of M. D. on John Steele, of Dayton, Ohio.

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No. II.

ARTICLE I.

THE STUDY OF
POPULAR ANATOMY.

THE history of the world gives us the most indisputable evidence of the truth, that "knowledge is power," and shews us that no people can arrive at any eminence in arts or arms, in political importance or individual respectability, without bestowing some pains on the acquisition of knowledge.—Wherever the understanding has been most improved, and the intellectual faculties rendered most energetick, by proper employment, there has ever been found a concentration of the greatest excellencies and highest attributes of the human character. There wisdom has displayed the fulness of her beauties, and dispensed the richness of her stores: there the dignity of virtue has put to shame the audacity of vice, and from the towers of those who cherish letters, arts and science, the imperial eagle ever sails "in supreme dominion" over every surrounding ignorant nation or tribe.

Man is naturally led to seek his own comfort and self-preservation, in preference to every other object, so that the actions he performs, however truly beneficial they may be

others, are still directly or indirectly connected with the advancement of his own good or the gratification of his own feelings. Hence the ultimate object of all scientifick research, is to arrive at such conclusions as may be applied to lessen the evils by which we are inevitably surrounded, or to supply the wants inseparable from the peculiarities of our social relations. The attention bestowed on the various branches of scientifick knowledge, has been very much proportioned to their bearing on the immediate interests of society, and to their power of contributing to the ease and enjoyment of life.

To know human nature so as to be able to decide on the dispositions and characters of men, has ever been considered very desirable and highly important. Whole libraries have been filled with treatises on this subject, and as many more might be written without exhausting it, either because the correct mode of investigations has not been adopted, or because we are not sufficiently acquainted with the premises to draw fair or unexceptionable conclusions. Of one thing we are certain, that men have not sufficiently nor rightly studied themselves, either to judge properly of others, or to understand their own peculiarities. To investigate successfully the characters of those amongst whom we live, it is requisite that we should be informed of the general structures and modes of action of our own bodies, that we may learn as nearly as possible how much the organization has to do with the intellect, or how far it may be connected with the various operations of the mind. To effect this, it is indispensable that some general knowledge should be gained of the various organs of sense and motion, as well as of the laws that govern the performance of all the important functions, so that when we come to examine the principle of intelligence which distinguishes us from the inferiour animals, we shall not be groping in the dark, nor be so liable to make gross mistakes in regard to the whole as if we confined our attention exclusively to single parts. In gaining knowledge, we shall not be losing or mispending time, if we should not be able to arrive at any satisfactory certainty as to the nature of the human understanding. We shall have employed our moments advantageously and well, if we acquire some correct ideas of the construction and perfect excellence of our organization—the manner in which the parts of our

body act and are acted on in health and in disease, which will not fail to lead to such inferences as will aid us in avoiding the causes of the one, and teach us to value and preserve the other. To this knowledge we should be happy to call the attention of those who are not obliged to study the subject *technically*, in such a way as to shock no feeling nor excite any disgust.

To prepare ourselves for a consideration of such topicks, it is necessary to be as entirely freed from prejudice as possible, and that we commence with a determination to yield ourselves only to such testimony as cannot be set aside. Should we find the existence of some things to be very different from our expectations, we must be ready to part with the most cherished notions when controverted by facts, and to forego our prejudices when we discover that they derive no support from nature nor reason. In pursuit of knowledge, we are in no danger of seeing or learning too much. It is the vain and superficial inquirer into the secrets of nature, who is liable to be tossed by every wind of doctrine. Those who drink deeply from the pure and inexhaustible fountains of wisdom, acquire an enlargement of faculties which enables them to look far beyond the horizon that bounds the view of the uninstructed. They see, in every new source of wonder and delight presented in the works of nature, that Omnipotence alone could give them being: they feel that all creation, from the smallest to the greatest, are connected in regular gradation and sustained by the same power, and that the zephyrs which waft to our delighted senses the fragrance of ten thousand flowers, no less than the mighty hurricane which carries dismay and desolation in the rushing of its wings, result from his pleasure or execute his commands.

Some persons fear to engage in an investigation of the structure and functions of the brain, lest they be led to adopt opinions which are peculiar to those called *Materialists*. Yet this is an unnecessary fear, as the more minute examination of the subject will shew. Whatever be the conclusions to which we are led, they cannot affect the existence of the truth; nor can we be in danger of making any great mistake, if we decide on nothing without the most scrupulous examination of facts, together with a most rigid scrutiny of every thing offered in the form of argument. Another reason which should induce

us the more fearlessly to examine this subject, is, that *materialism*, so called, is as airy and unsubstantial a name as any belonging to our language, and requires as great a stretch of credulity to insure its acceptance in explanation of intellectual phenomena as any theory which has been proposed.

It has been correctly remarked, by a great philosopher, that we are acquainted with matter solely by its qualities—we know that some bodies are hard or soft, square or round, white or black, yet we cannot carry our knowledge of them, beyond their qualities. Our systems of chemistry and natural history are composed with a view to make us acquainted with the qualities exclusively possessed by various bodies, which enables us to distinguish these bodies from others and to refer similar qualities to the same place in an arrangement. We remain, notwithstanding, as ignorant as before, of the reason *why* they are always possessed of the same properties, or *what* is their peculiar nature. Those who profess to be materialists are fully as distant from the essence of things as the persons who are of an opposite belief. They think the human mind a quality of matter, and dependent on organization, although they see the organization impaired or partially destroyed, without a destruction of the faculties of the mind. Such persons will say that they cannot believe in the superaddition of any principle to the organization, because they cannot submit it to the organization of their senses. The same persons can believe in the superaddition of a principle independent of organization, in several instances where the testimony is not stronger than in favour of the superaddition of a principle to the organization of the brain.

No man who has ever seen a magnet, can doubt the existence of a power or influence which is superadded to a piece of metal, or of the possibility of transferring this influence to other pieces of metal, not before possessed of it. In the magnet there is nothing which can lead one, from any examination, however severely conducted, to believe that the metal possessed so singular and powerful an agent, and it is only by witnessing the magnetick qualities of attraction and repulsion that we know this influence to be present, although we still remain in entire ignorance of what magnetism really is. It is called the magnetick fluid—yet fluid it cannot be, according to any known laws or qualities belonging to other fluids for, 1st, it has no

sensible properties, is imponderable, inodorous, insipid, and invisible; 2d, if it be an aeriform or gazeous fluid, the attraction between its particles should be overcome, and it should have a tendency to diffuse itself on all sides, unless forcibly detained, which is not the state of things, as we find the magnetick influence remaining for years unimpaired, although in free contact with the atmospherick air. There are many facts belonging to the science of chemistry in which similar circumstances may be observed, and which are not explained, nor cannot be by any knowledge we at preseut possess of matter.

There is one method resorted to by those who defend the doctrines of materialism, which, if it proves nothing, at least serves the purpose of making an adversary silent. If he attempt to convince them by examining the facts on which they found their opinions, they brand him with the name of *metaphysician*, a term now used to denote a mere dealer in words. If he attempt to shew by analysing *their* deductions, the want of connection between their premises and conclusions—they say, he can produce no facts. On their own part, they would claim a prescriptive right of introducing whatever they pleased in support of their notions, and to bring from the remotest regions even the slightest aid to their doctrines. Let us set it down as an axiom that the man who uses reproaches instead of argument is conquered—that he who does not know that facts are to be collected, merely that they may be examined by the understanding, is weakly ignorant; and finally, the person who excludes reason from her proper domain, that of deciding on the applicability of facts to conclusions, is of all things, least like a philosopher.

Man is, under every aspect, so admirable a subject for contemplation, as to excite the highest degree of interest and afford the greatest enjoyment to the student when he considers him either morally or physically. But the study of his physical constitution becomes doubly attractive when it is received in connection with his intellectual energies, and we are pleased with the hope of being able to trace the instruments which display those wonderful varieties of character and intelligence to be seen throughout our race, from the veriest creature of sensation, up to those sublime beings, whose mental attainments have proved them capable of grasping all knowledge, and whose genius has

given them possession of all human power. Whether this hope is ever to be realized, or is to prove illusory, patient investigation alone can determine—whether we shall ever be able to advance beyond the limits within which we have hitherto been confined by the obtuseness of our faculties and the difficulties of the subject, time and experiment must decide; this truth is obvious, that the more we study our own race, the more shall we have it in our power to adapt our actions to our mutual interests and avoid such evils as flow from want of proper acquaintance with ourselves.

Inveterate prejudice, the potency of superstition, and the timidity of ignorance have been particularly active in preventing the more general study of anatomy. The presentation of a body for inspection, to one not obliged to study this subject, would awaken associations too disagreeable to be endured. Imagination, ever ready to snatch the sceptre from reason, would hurry him away into the shadowy region of terrors, and array before his eyes a host of spectres and chimeras dire. He would be unable to separate his recollections of the living from the examination of the dead; he would be thinking on the *man* when he should be studying the *machine*, or involuntarily shrinking from the pain, which he fancies is inflicted, while he should be eager to see the structure which is laid bare by the hand of the teacher. But when once a slight degree of experience is gained, these evils vanish; before the calm and steady light of reason they fleet away, as do the morning vapours from the face of the glorious sun, when he "comes rejoicing in the East."

It is possible, however, to spare ourselves the pain of a *technical* consideration of anatomy, while we may at the same time gain possession of many useful and interesting truths. By divesting the science of its severe aspect, and repulsive costume, the general student may be tempted to advanee farther than anticipated. The knowledge he acquires, will be gained without great exertion, and will be very useful in enabling him to understand man's condition, in which the system may be placed, as well as aid him in the study of the peculiarities, dispositions and character of the human mind.

Knowing how important it is, for a learner to be free from prejudice, let us endeavour to bear constantly in mind, the

propriety of examining with impartial justice the facts from which we are to draw conclusions. Without pinning our faith on any teacher, book, or sect, we may candidly inquire for ourselves and judge from the evidence before us, being thoroughly convinced that if we study nature without prejudice, we cannot apply to her bounty in vain.

It is impossible for us to say that we should not wish the correctness of our doctrine to be established in preference to another. We have so long believed that there is a nobler and more imperishable principle connected with our bodies, as to be entirely unwilling to relinquish the opinion until forced by irresistible conviction. In a contest where so much is to be gained or lost, we should not decide rashly; we ought not to suffer facts to pass slightly into proofs of doctrines; we should be duly cautious that we are not deceived by doubt as much as by enthusiasm. Yet if an entire and scrupulous investigation of all circumstances removed every reason or hope that such was the fact, and thoroughly convinced us that the existence of this principle is impossible, *then*, and *then alone* should we forego this idea; though with the same reluctance that we receive incontestible evidence against the character of a long loved friend; we should feel as one does, who having dropped a precious jewel into the fathomless deep, stands gazing on the spot where it vanished from his sight, certain of having lost an invaluable treasure, and in utter despair of ever recovering it again.

ARTICLE II.

PHYSIOLOGY.

Account of a new Venous System, discovered by Louis Jacobson; *first published in the Journal de Physique.*

ANATOMICAL investigations continued for many years, have led to the discovery of a new and unknown system belonging to a great number of animals. The first observations made on this subject, were offered by me to the Philomathick Society of Paris—the latter ones were addressed to the Royal Society of Copenhagen. Though many causes, at present, prevent

the publication of these observations in as perfect a form as could be wished, yet we have thought it well to subject the outlines of this *venous system* to the inspection and criticism of the learned.

In man and the other mammalia, all the veins, excepting the vena portarum, are so connected as to form one continuous system, which conveys the refluent blood from all the parts of the body to the heart. In these animals, the veins which come from the inferiour or posteriour part of the body, unite in a common trunk, whence the vena cava is formed, and the blood is conveyed directly to the heart.

But this common arrangement by no means exists in all the vertebral animals. A *new* and *peculiar* venous system exists, which is *not directly* connected with the other veins of the body. By means of this newly observed system, the blood which flows from the middle or posteriour parts of the body, *does not* enter the inferiour vena cava, and thus reach the heart—but is carried *to the kidneys*, or to the kidneys and liver.

This peculiar system is observed in *birds, reptiles and fishes:* its primary form is subject to three degrees of modification.

The first, which may be considered the *prototype* of the rest, is of this kind: from the skin and muscle of the middle of the body small branches arise, which form many trunks: these coursing towards the kidneys, again separate into branches in the substance of these organs, and are there variously distributed.

The second modification arising from the first, is that in which the veins, returning from the posteriour part of the body, are received into this system. The caudal vein, which brings the blood from the skin and posteriour muscles, forms two branches, which having received some veins returning from the middle of the body, go to both the kidneys and distribute their branches in the substance thereof.

In the third modification, the veins of this system are formed in the same manner as in the preceding, except that the caudal vein, or another returning from the posteriour parts, also sends a branch to the vena portæ. The refluent blood from the middle and back part of the body in the first and second modification of this system, is carried to the *kidneys solely*—while in the third variety, both to the kidneys and liver.

The inferiour vena cava of the *common venous* system, in the second and third modification, is formed by the veins returning the blood from the kidneys and testicles, or from the ovaries. In the first case, the caudal vein receives the returning veins of the kidneys, is joined by the veins of the testicles or ovaries, and in this way forms the inferior or ascending cava.

We shall now endeavour briefly to explain how this singular venous system is composed in various classes of animals.

In *fishes* it appears in all its modifications. In many kinds of fish, where the venous system is formed according to the first modification, all the blood of the skin and muscles which form the middle of the body, from the head to the root of the tail, is taken up by venous branches. These then concurring in many single trunks, run in different directions towards the *kidneys*, and are dispersed throughout their substance.

The caudal veins terminate in a common trunk, flowing between the kidneys, where, when they have received the recurrent veins of these organs, together with the veins of the testicles and ovaries, they are conjoined to form the inferior vena cava. This modification is the prototype of this system of veins, as the branches composing it are very generally present in the other varieties. The venous system thus arranged, is found in many genera, as in the cyprinus, clupea, &c.

Another modification is certainly most frequent in fishes.—All the blood of the posteriour, and very often even of the middle part of the body, flows *to the kidneys*. The caudal vein as it reaches the kidneys is already separated into two principal branches, which, with the exception of single trunks from the middle of the body, are distributed throughout the kidneys.—Genera possessing large kidneys have a part of the veins as single trunks going from the middle of the body to them.

The vena cava arises thence as the veins returning the blood from the kidneys (the *renal* veins, properly so called, are returning veins;) are united with the veins of the testicles and ovaries.

This venous arrangement is found in the ray, pike, flounder, &c.

The third modification is nearly similar to the above, differing from it only in this, that the caudal vein besides the branches going to the kidneys, sends a large branch to the vena portæ, so that the blood of the posteriour and middle part of

the body is conveyed partly to the liver. Nevertheless the vena cava is formed in the same way as in those fishes whose venous system is disposed according to the second variety. It is more rare, however, in this class of animals, as far as I have yet examined, except in the muræna and lophius.

In all the *amphibious* animals, this venous system is arranged as in the third modification, differing, however, as their tails or posterior extremities vary in magnitude.

Moreover, the organ proper to the class of amphibious animals gives some veins to this system. This organ consists either of a double membranous sack opening into the cloaca, and very often containing a pellucid liquor, or of an oblong membranous sack filled with fat, and not communicating with the cloaca.

We shall now describe the modifications of this venous system, as presented in various genera of these animals.

Serpents. In these animals, the peculiar organ is composed of two very long membranous sacks, filled with fat. The system of veins is formed from the caudal vein, which separates to go to each kidney. These veins going to the kidneys, send an anastomosing branch to the vena portæ. The veins of the peculiar organs, and of the anteriour abdominal muscles.

The vena cava arises from the *proper renal* veins, returning the blood from the kidneys, which unite with the veins of the testicles or ovaries.

Lizards. The peculiar organ of these animals is formed of a membranous and cellular sack filled with fat, and placed at either side of the inferiour part of the belly. The caudal vein unites with the ischiatick vein, and with a branch of the crural vein, and in this manner forms the *renal conferring** vein.—Another branch of the crural vein confluent with an analagous branch of the other side, receives the veins arising from the peculiar organ and inferiour abdominal muscles, goes towards the vena portæ, and pours the blood into it before the latter enters the liver. Some veins arising from the anteriour part of the abdominal muscles, cross the liver and flow into the trunks of the vena portarum. The vena cava is formed as in the animals before mentioned.

Turtles. The peculiar organ of these animals is of great magnitude. It is composed of cellular membrane, extended

* Advehentem.

throughout the whole inferiour part of the body, and is filled with fat. The caudal vein, variously joined with the veins of the inferiour extremities, forms the *conferring* renal veins of each side. The rest of the crural, with veins returning from different parts of the peculiar organ, partly form a secondary and adscititious *conferring* renal vein, and partly joined to the superiour part of the abdomen, separately, or conjointly, at the inferiour part, to the liver.

The vena cava is formed from the *refluent* veins of the kidneys, testicles, or ovaries, in the same way as in the other animals.

Frogs. Their peculiar organ is a membranous sack joined to the cloaca. The caudal vein, which is small, joins with the schiatick, and having received an anastomosing branch from, the crural vein, forms the *conferring* renal Another branch arising from the crural, goes to the lower part of the abdomen, and there associates with an analagous branch of the other side, receives the refluent veins from the peculiar organ and forms a common trunk, which having received the veins arising from the muscles of the inferiour part of the belly, flows into the porta. The origin and arrangement of the vena cava, is the same as in the other *amphibia.*

In the class of *birds*, we find this venous system composed and arranged according to the third modification—and indeed we have remarked only few and slight variations in this class. But in these animals the transition to the (arrangement of) mammalia is observed, in which this newly discovered venous system is united with the common one.

The caudal, ischiatick, and crural veins, are variously conjoined, and flow to the kidneys, where the branches are dispersed, sending a larger anastomosing branch to the vena portarum. But the crural vein having sent a branch to the upper lobe of the kidney, is also joined to the lower as well as the ischiatick, and sends a middle branch, which goes to the vena cava.

This venous system in animals of different classes, differing from each other in structure and organization, exhibits a perfect and absolute analogy of composition and arrangement.

From anatomical examination, and from many experiments made on living animals, I am persuaded that this venous system performs the office of conveying the venous blood, refluent from

the posteriour or middle part of the body *to the kidneys*, or to the kidneys and liver: and in these organs is subservient *to the function of secretion*. Hence in birds, fishes and reptiles, the secretion of the kidneys is effected by veins and from venous blood.

In relation to the formation and origin of this system, examination of the embryos of birds and some amphibious animals, have convinced me, that its origin is owing to the umbilico-mesenteric veins. It is therefore probable, that this system is the first to begin the exercise of its function.

I have, moreover, continued my investigations in inferiour animals, and have found even in mollusca, many veins to go to the organ, called "sacculus calcarius," and there to disperse: but the liquor secreted into this organ, (in mollusca gasteropodo,) contains an appreciable portion of *uric acid*. Wherefore I have concluded, that this organ is analogous to the kidneys of vertebral animals.

As in very many insects, the vessels called biliary, are found to contain uric acid, I think these organs should be received as of the same order.

The observations of this singular venous system, may possibly aid in the explanation of many important parts of physiology. But before I attempt to explain this subject more fully, I earnestly ask and wish, that such as have an opportunity of examining the more rare animals, especially those forming a transition between the various great families, will kindly communicate their observations, and particularly, should they discover that any part has not been examined with sufficient accuracy, that they will point it out.

ARTICLE III.

REVIEW.

A Comparative View of the Nervous and Sensorial System in Man and other Animals. By JOHN C. WARREN, M. D. Professor of Anatomy and Surgery in the University of Cambridge. Boston, 1822, pp. 151.

From the Philadelphia Journal of the Medical and Physical Sciences.

WHILE the physiologists and metaphysicians have been busy in disputing on the *location* of the human mind in a certain

part of the body, and *appealing* to *assertions* made by authors in defence of their opinions, our distinguished countryman has been engaged in the examination of facts, and in the interrogation of nature herself. Free from any apparent prejudice for or against a particular theory, he has investigated the structure of the brain in man, and various inferiour animals; and by the carefulness and accuracy of his observations, has rendered an important service to the cause of true science, by dispersing the errors that flowed from the want of correctly established data.

We are also much indebted to him for referring us in so pleasing a manner to comparative anatomy, for the elucidation of those parts of physiology which are necessarily obscure.—The utility of this science, has hitherto been too little known in this country, and even where acknowledged, has seldom been sufficiently employed. It is needless to think of advancing far in the knowledge of the functions of the human system, without a thorough and careful examination of the varieties of structure and function to be perceived in the different classes of inferiour animals, and studying the analogies which exist, and may be applied to the explanation of phenomena, that might otherwise remain forever veiled from our eyes. It is only by resorting to the study of comparative anatomy and physiology, that we can hope to acquire any useful idea of the great general principles employed by nature, in the performance of her operations: it is only by scrutinizing the modifications of structure, that we can expect to understand modifications of action—it is solely on a fair and impartial deduction, made from a candid examination of *facts*, that we can successfully erect a superstructure capable of bidding defiance to the storms of controversy, or of withstanding the silent injuries of time.

Dr. Warren begins his work with a well conducted examination of zoological arrangement, and adopts that, which was proposed by Linné, and since modified by Cuvier and others. His views of the anatomy in the different classes, are highly satisfactory and correct, and his *comparisons* are made in a very interesting manner. These, on account of their length, we must refrain from quoting, but we cannot deny ourselves the pleasure of presenting the reader with the conclusions which he draws from the whole examination.

"In the first place, we are allowed, I think, to infer that the brain and nerves are not essentially connected in function; or, at least, that this is true in regard to the function of the nerves. There appears to be no relative proportion in the magnitude of these organs in different animals. In man, and most of the mammalia, the bulk of the brain is considerable, compared to that of the nerves; while in reptiles and fishes, the *nerves* may compare in size with those of the superiour classes, but the brain is very small. The same is true, even in different orders of mammalia: in the horse, for example, the brain is small, the nerves of great size. Another fact bearing on this point, is, that in the invertebral animals there is no proper brain; at least, the organ we call by this name in the acephalous mollusca, crustacea, worms, and insects, differs greatly from the brain of the vertebral animals, and is in truth little different from the ganglia. Yet in these animals the nerves are very distinct, and even, in many, large, in proportion to the other organs. Analogical reasoning is useful where we cannot resort to facts; but we would not have it applied too confidently, nor even without recollecting that the degree of belief due to it, is lower than that belonging to fact.

"In the second place, we may conclude that the brain is not the source of the muscular power. This conclusion is founded on a consideration of the disproportion in the size of this organ to the muscular strength of various animals. In the horse, the brain, as just stated, is small, the muscular vigour great; in the great sea shark, *squalus maximus*, the brain, compared with the body, is near the smallest among the vertebral animals; while the strength of the animal is so great, that one of them has been known to drag a vessel of seventy tons, under full sail, against the wind.

"Third. It seems probable that the muscular power does not take its source from the nerves. The facts in support of this opinion are few in number, and the principal one is the non-existence of nerves in some animals capable of moving. In the gelatinous polypi and some other zoophytes, no nerves have been discovered, and we are, from their texture, led to believe it impossible they should have any such nerves as other animals; yet they move, some of them with considerable rapidity.

"Fourth. Many of the facts noticed, tend to prove that the nerves receive the impression of objects made on the external senses, and that by them these impressions are transmitted to the brain. It is not intended here to involve the hypothesis, that perception in the brain is caused by any kind of movement in the matter of the nerve: all that we wish to say, is, that when the nerve expanded in an organ is affected by objects to which the organ is susceptible, it is in consequence of this affection that the brain perceives; and that, without the continuity of nerve, the brain cannot perceive. This has been thought to be satisfactorily proved by the suspension of perception, consequent on the division of a nerve; but those who maintain the opposite doctrine, consider the division of a nerve so far to impair its perfection, as to render the experiment uncertain. If we look to comparative anatomy to determine these questions, we find that whenever an organ of sense is more than commonly developed, the nerve belonging to it is in the same degree developed in the organ. Further, that the size of the nerve, before reaching the organ, is always proportioned to the developement of the nerve and organ; and that whenever a sense is wanting, the nerve usually going to the organ of that sense, is also wanting. In birds, the sense of sight being acute, the optick nerve is largely developed in the organ, the size of the nerve, before reaching it, is considerable, and there is a ventricle connected with the nerve. We have before noticed the same fact in regard to the olfactory in some quadrupeds. Why should the optick nerve be of large size between the brain and the eye, except to transmit to the brain, the impressions received in the eye? In the whale, the organ of smell is wanting: the nerve sent to it in other mammalia, is also wanting. In some birds, the organ of touch is placed at the extremity of the bill, and there is a correspondent arrangement of elegant nerves of the fifth pair. The same is true of certain quadrupeds, as the elephant, which has the sense of touch at the extremity of the trunk; and the ornythoryncus paradoxus, the duck-billed animal of New Holland. In this singular creature, most of the qualities of a quadruped are united with some of those of a bird; and particularly, it has a bill like a duck, covered with a sensible membrane, which enables it to discover its food in the mud, where it could not

employ the sense of sight; and the distribution of nerves accords with the peculiar situation of this sense.

"The manner in which the nerves act in transmitting impressions to the brain, or causing perceptions in this organ, is no more explained by comparative anatomy than by the numerous experiments and theories on nervous action. Nor have we much reason to expect we shall ever be well acquainted with the functions of this part of the animal fabrick; though Sir Everard Home seems to think his late discovery of the mucous matter, connecting the globules of nerves, will throw light on its mode of operation.

"Fifth. The brain is the common centre for receiving the impressions of the senses transmitted by the nerves, and is therefore rightly called *sensorium commune;* and where there is not a proper brain, the ganglion, which supplies its place, performs the same office. In all animals with organs of external sense, the nerves belonging to these organs go from them to the brain. This is true, not only in the more perfect animals, it is so in the mollusca, crustacea, insects, and annellides; with the inconsiderable exception, that in some instances, the nerves of an organ of sense are connected with the brain, or substituted ganglion, through the medium of the collar, instead of being immediately so with the brain.

"Sixth. This comparative view of the sensorial system does not seem to support the opinion, that the difference in the intellectual faculties of man and animals is to be explained by a difference in organization alone."

This extract will be sufficient to show the importance and usefulness of our author's investigations, and to establish the truth of the opinions we have advanced relative to comparative anatomy. The candour with which his statements are made—the freedom from prejudice in his conclusions—and the clear and energetic style of his reasoning, cannot fail to give the highest pleasure to the reader.

We are also persuaded, that the following quotation from the work, will be perused with deep interest, by those who have attended to the now fashionable doctrines of craniology. If it be considered attentively, it must produce a conviction of the insufficiency of that support which was thought to be derived by this doctrine, from the science of comparative anatomy.

"The authors of the craniological or physiognomical system, seemed disposed to refer frequently to comparative anatomy for the support of their doctrines; but so far as I have observed, there do not appear to be very good grounds for such a reference. If any animal be remarkable for a propensity, and exhibit a peculiarity in the form of the cranium, they connect these two facts together, and consider the peculiar part of the cranium or of the corresponding brain to be the seat of the propensity; and this they think certain when such facts concur in regard to more than one kind of animals; and they believe that these facts tend to confirm the connexion between similar appearances and propensities in the human species.

"One or two examples will be sufficient to show how far they are justified in their appeal to the anatomy of animals. The organ of *combativeness*, or courage, is said to reside in the space between and behind the ears; that is, in the part which corresponds to the posteriour inferiour angle of the parietal bone, behind the mastoid process: and 'courageous animals have the head between and behind the ears large.'* Some of them, in truth, have the head large, but not the brain. The cavity of the cranium in the *lion* and in *large dogs* is oblong in a direction from before backward; the skull is narrow at this part, and the appearance spoken of does not exist in the bones. In the skulls of two lions in my possession, and various large dogs, the cranium is more narrow at this part than in the skulls of *various monkeys*, and is not materially broader than in the sheep. In birds, the cranium of an owl is broader than that of the eagle. The great apparent breadth in this part of the head of the lion, is produced by the enormous thickness of the temporal muscles; and when they are stripped off, the skull is seen to be actually narrow.

"The *organ of amativeness*, which Dr. Gall formerly called the organ of physical sensibility, is placed in the cerbellum, its region externally, corresponding with the lowest posteriour part of the os occipitis. An examination of this region in animals, remarkable for the propensity, does not exhibit a considerable developement of the part. In the monkeys generally, it is much less developed than in man; and in the baboon, the most extraordinary of all animals for the propensity,† it is in no way re-

* Physiognomical System, p. 302. † V. Buffon. Hist. Nat. des singes.

markable. Further, a comparison of the proportionate bulk of the cerebellum is still more unfavourable to this opinion; although Dr. Spurzheim seems to consider this as one of his strongest positions; for the cerbella, he says, are always proportioned to the propensity; they are larger in men and males, than in women and females; and, on the whole, he concludes, 'that this organ and its special faculty are fairly established'.* If the table of the cerbellum, before given, be noticed, it will appear that the proportion of the cerbellum is, in many animals, greater than in the monkeys; and that precisely the same proportion exists in the baboon and in the horse: animals differing widely in the degree of this propensity.

"On comparing the skulls of various birds, I have not been able to verify, in a distinct manner, the supposed situation of the *organ of tune;* and the remarks relating to some other parts of the structure of the brain, and to its organs, in animals, have not appeared to be stated in such a form as to render it possible to determine their exactness."

It is impossible to read these observations and not confess, that those who have made triumphant *assertions*, that they were supported in the doctrine of craniology by comparative anatomy, are now entirely deprived of its aid. We had long entertained the belief, that an examination of the relation between the external figure of the skull, and the internal developement of the brain, would not justify the conclusions drawn, and we are now happy to find, that this point at least, is incontestibly settled. Future inquirers need no longer be misled, by inferences heretofore so hastily made, but must seek for new supports to their doctrine, in a closer and more correct observation of nature. Doubtless, the implicit reliance placed in the correctness of many assertions, made by the authors of the *new system*, has been a great obstacle to the progress of truth, and has retarded the establishment or refutation of the doctrine.

In taking leave of this work, we should be unjust, were we not to express our gratification, and to commend it earnestly to the profession, as a production worthy of their serious attention and imitation. The neatness of the printing, and the beauty of the plates, should not be passed without remark.—These, however, are its slightest merits. The excellence of the investigations, the correctness of the inductions, and the

* Phys. System, p. 234.

truly candid and philosophical spirit exhibited throughout, will ensure it a favourable reception, from every zealous cultivator of the fertile field of natural science.

"*Account of an Expedition from Pittsburgh to the Rocky Mountains, performed in the years* 1819 *and* '20, *by order of the Hon. J. C. Calhoun, Sec'y. of War, under the command of Major Stephen H. Long: from the notes of Major Long, Mr. T. Say, and other gentlemen of the exploring party. Compiled by Edwin James, Botanist and Geologist for the expedition. In two volumes—with an Atlas. Philadelphia,* 1823."

THERE are no writings which so strongly fix the attention of readers as the narratives of travellers, especially when their observations relate to countries till then unexplored, and to objects hitherto undescribed. We become extremely interested in the personal history, the sufferings, exertions and dangers of the adventurers; we are carried along through their different vicissitudes, sympathizing with them as good or evil attends, and when we have arrived at the conclusion of the volume, feel as if bidding adieu to friends from whom we cannot part without regret.

Such have been our feelings in perusing the journal of this expedition, certainly one of the most interesting works that has for a long time appeared in this country, whether we regard the subjects of which it treats or the manner in which it is composed. We think the gratitude of the publick due to Mr. Calhoun for originating the expedition, as well as for the excellent selection of persons made to perform it. The manner in which they have discharged the duties assigned them, and the extent, accuracy and usefulness of their observations, will give to their journal a stability of reputation co-existent with the regions they have explored.

Instead of merely criticizing the work in general terms, we shall present our readers with interesting passages, selected to awaken curiosity rather than as exhibiting a view of their entire labours. This curiosity cannot fail to be most pleasingly rewarded by a perusal of the journal, which throughout is to a high degree interesting. The following account of the diseases and medical practice of the tribe of Omahaws, living in

the vicinity of Engineer Cantonment, where the party spent a winter, will doubtless be peculiarly interesting to our readers.

"The Omahaws endure sickness and pain with great fortitude; most of them, when thus afflicted, rarely uttering a murmur. Their catalogue of diseases, and morbid affections, is infinitely less extensive than that of civilized men.

"Rheumatism is rare, and gout appears to be unknown. No case of phthisis or of jaundice fell under our observation. King's-evil is not uncommon, and although they have no reliance on the sanative touch of a king or chief, yet, as their practice seems confined to an inefficacious ablution with common water, many fall victims to the disease. Many are also afflicted with ulcers, which sometimes terminate fatally. Decayed teeth are rare. Plica polonica is unknown. Baldness seems to be also unknown, the hair being always retained, however advanced the age of the individual.

"Nymphomania occurred in the person of a widow, who was thus afflicted about two months; her symptoms were attended with an effusion of blood from the nose. On her recovery, she attributed the disorder to the operation of some potent mystick medicine.

"Hypochondriasis seems to be unknown. Canine madness also appears to be without an example, their dogs not having yet been visited by the disease. They are rarely afflicted with dysentery, though children are sometimes subject to it in consequence of eating unripe fruits, such as plums, grapes and maize. They are never known to be subject to the *coup de soleil*, although they travel for days and even weeks over the unsheltered prairies, without any covering whatever for the head, which is consequently exposed to the full radiance of the sun, both in a state of activity and quiescence. White men residing with them, and who have partaken in their hunts, and consequent insolation, have been visited with this distressing affection, although their heads were protected, invariably, by hats or handkerchiefs.

"The cuticle of these Indians is not known to have been acted upon by contact with poisonous plants, though white men, travelling with them, have experienced the effects of the usual deleterious properties of the poison vine (rhus radicans,) which is, to a certainty, abundant in proper situations in the Missouri country. What effects would result from the application of

this plant, to the only part of the body of the Indian, which is never exposed to the direct influence of external causes, is a subject deserving of experimental inquiry.

"The hare lip sometimes occurs, but it may be properly considered as still more rare, than amongst white people.

"Frosted limbs are treated by immersion in cold water, so as gradually to restore the lost temperature of the part. The magi also perform over them their mystick rites, amongst which the only topical application is made by chewing some roots, and blowing the fragments and accompanying saliva violently upon the part, with many antick capers.

"Goitre and wens are not known. Fevers, and fever and ague, are exceedingly rare. Ophthalmick diseases, and casualties affecting the eye, are frequent. The eyes of children are sometimes injured or destroyed, by missiles, in incautious play or juvenile rencontres. But blindness is more frequently the effect of the gradual operation of disease. The eyes become sore and the lids inflamed; white opake maculæ, after some time, appear in the eye, which enlarge, until they cover it entirely, and prevent the ingress of light. It is probable that they possessed no rational remedy for this evil, previously to their acquaintance with the traders, excepting the extracting of blood from the temple, by their process of cupping: the traders, however, have taught them to remove the opacity, by blowing burnt alum into the eye through a quill, a remedy so familiar in the veterinary art. To this disease children, as well as adults, are obnoxious.

"Another ophthalmia, which also results in the destruction of the faculty of vision, commences with a superabundant secretion of the fluid of the lachrymal duct, succeeded by inflammation of the lids: the sight becomes gradually debilitated, until at length the pupil assumes an opake white appearance, probably fistula lachrymalis.

"Temporary blindness, which sometimes eventuates in permanent loss of sight, occurs during the winter, to incautious travellers who pass over the prairies covered with snow, from which the solar light is so brilliantly reflected. A party, that accompanied Mr. Dougherty on a journey, being thus exposed, became unable to distinguish objects, and had not his sight been preserved, they might never have regained their stockade.

"The blind are not neglected by their family and friends; on the contrary, we had several opportunities of observing them to be well clothed and fed, and much at their ease. When superannuated, however, they are not exempted from the fate attendant on that state.

"An affection, or pain in the breast, distinguished by the name of Mong-ga-ne-a, seems to be the consequence of excessive indulgence in tobacco, and the habitual inhaling of the smoke of it into the lungs. In their attempts to alleviate this complaint, the magi affect to extract from the part, by suction, balls and pellets of hair, and other extraneous substances, which they had previously concealed in their mouths, for the purpose of deceiving the patient.

"An individual applied to one of our party to cure him of this pain; but being advised to desist from the indulgence of tobacco smoking, he appeared rather willing to bear with his disease.

"They sometimes say that their livers pain them, a disorder which they call Ta-pe-ne-a.

"They are not exempt from catarrhs, the consequence of great exposure to sudden vicissitudes of temperature; a disease similar to the influenza, is sometimes prevalent, and known by the name of Hoh-pa.

"A deaf and dumb boy occurred in the Oto nation; an adult with a curved spine; and another with an inflexible knee, the leg forming a right angle with the thigh. But we have not observed any one of them with either eye deviating from the true line of vision.

"The medical and surgical knowledge of the Omawhaws is very inconsiderable, and what there is, is so much blended with ceremonies, which to us appear superstitious, inert, and absurd, that it would seem, that, with the exception of a few instances, they have no reasonable mode of practice.

"Sweating baths are in much estimation, and are used for the cure of many ailments. These are temporary constructions, generally placed near the edge of a water course: they are formed of osiers, or small pliant branches of trees, stuck into the soil in a circular arrangement, bent over at top so as to form a hemispherical figure, and covered in every part with bison robes. They are of different sizes: some are calculated

to contain but a single individual, whilst others afford space for five or six at once. The invalid enters with a kettle of water and some heated stones, on which the water is sprinkled, until the steam produced is sufficient for his purpose. When they conceive that his perspiration has been as profuse as necessary, he is taken out, and plunged into the water, and even if the stream be covered with ice, this is broken to admit the patient. He is not subjected a second time to the action of the steam, but covers himself with his robe and returns home.

"We did not learn, that they possessed any knowledge of cathartick or emetick medicines. But as a substitute for the latter, a feather is thrust down the throat, until its irritating effect produces vomiting.

"For the cure of cholick, warm topical applications are made, and the abdomen is kneaded with the fist.

They have no substitute whatever for opium, and we do not know that they have any for mercury.

"For the alleviation of an internal local pain, a severe remedy is sometimes resorted to. A portion of the medullary substance of a plant, is attached to the skin over the part affected, by means of a little spittle; it is then touched with fire, and burns slowly down to the skin, upon which a vesication is soon produced, and accomplishes the object intended, of removing, at least for a time, the internal pain to the surface. This seems to be the only species of actual cautery made use of.

"The Indians, who reside in the upper regions of the Missouri, practise bleeding for various ailments. This operation is sometimes performed with a knife or arrow point. At other times, and not unusually, a sharp stone is placed upon the part from which blood is to be drawn, and it is then struck with a stick, much in the same manner that veterinations operate with the phlegm. They thus bleed in the arm, thigh, leg, &c.

"They never dissect the human body, expressly for the purpose of acquiring a knowledge of its structure; but they have a general idea of the position of the vitals and viscera, acquired upon the field of battle, by their custom of hacking the carcasses of the slain; a knowledge which teaches them on what part of the body of an enemy to strike, in order that the wound may be mortal.

"Gun-shot wounds are administered to by the magi, who pow-

wow over them, rattle their gourds and sing, whilst they chew roots, and blow out the fragments and saliva on the part. But the efficient practice in cases of wounds of this nature, is their system of depuration by means of suction: they apply their lips to the wound, and draw out the pus as it is secreted. By this mode of treatment they seem to be very successful in the cure of gun-shot wounds.

"Amputation of limbs is not practised in their surgery.

"The wound produced by the arrow, is treated much in the same manner with that of the gun-shot, after the weapon is thrust through the part, in the direction in which it entered; or, if this cannot be accomplished, the arrow is withdrawn, and the head or point being very slightly attached to the shaft, remains in the body, unless the wound is superficial, in which case it is cut out with a knife.

"A broken limb is extended to its place, and enveloped with a leathern strap: the union generally takes place promptly, but the member usually remains more or less bent or crooked.

"They have no rational mode of treating the scalp wound. A squaw who had been scalped, covered the part, after its edges had healed, with a peruke made of bison hair, until the hair on the other parts of her head, became of sufficient length to conceal the deformity.

"Dislocated members are reduced by extension, but with so little art, that they are frequently unsuccessful, and the limb remains permanently disjointed.

"The Omahaws are entirely destitute of all condiments, with the exception of salt, which, however, in their eating they rarely use.

"Confirmed insanity appears to be unknown.

"In the young squaw, the catamenia, and consequent capability for child-bearing, we were informed, takes place about the twelfth or thirteenth year, and the capacity to bear children seems to cease, about the fortieth year; but as superstitious notions prevent these Indians from taking any note of their ages, these periods are stated with some hesitation.

"When the married squaw perceives that the catamenia does not recur at the expected period, she attaches a small leathern string to her girdle, and ties a knot in it, to note the incipient state of pregnancy, and another knot is added, at the termination of each successive moon, as a register of its progress.

"When the squaw perceives the approach of this depurating process, she retires from her family, and erects a little shelter of bark or grass, supported by sticks properly arranged, where she makes a fire, and cooks her victuals alone. She is thus compelled by custom, to absent herself until the expiration of four days, when she returns to her lodge. During this time she must not approach, or touch a horse, as the Indians believe that such contamination would impoverish that animal. They sometimes retire and build their little shelter under a false pretext, when the real object is to favour the approach of some esteemed lover, to whom the vigilance of the husband has denied any other means of obtaining a stolen interview.

"The squaw has no need of propitiating the goddess Manageneta, but during her pregnancy, continues her usual avocations, and even in its most advanced stage, she neither bears a lighter burden on her back, nor walks a shorter distance in a day than she otherwise would; neither does she expose herself the less on that account, to the inclemencies of the weather.

"If, on a march, a pregnant woman feel the pains of parturition, she retires to the bushes, throws the buthen from her back, and without any aid, brings her infant into the world. After washing in water, if at hand, or in melted snow, both herself and the infant, she immediately replaces the burden upon her back, weighing perhaps between sixty and a hundred pounds, secures her child upon the top of it, protected from the cold by an envelop of bison robe, and then hurries on to overtake her companions.

"It is only at the delivery of the first child that any difficulty is ever anticipated, and on this occasion, as there are no professed midwives, the young wife calls in some friendly matron, to assist in case of need. The aid which these temporary midwives afford, seems to be limited to the practice of tying a belt firmly above the waist of the patient, and shaking her generally in a vertical direction, with considerable violence. In order to facilitate the birth, a vegetable decoction is sometimes administered; and the rattle of the rattle-snake is also given, with, it is said, considerable effect; the singular appendages of this animal are bruised by pounding, or comminuted by friction between the hands, mixed with warm water, and about the quantity of two segments constitutes a dose.

"The art of *turning* does not appear to be known, neither is blood letting practised in their obstetrics. We heard of no case of retention of the placenta after parturition, nor of the affection of *longing*, or of *nausea* of the stomach, during pregnancy.

"On the delivery of her first child, the young mother, who appears to be but little enfeebled by the process, arises almost immediately, and attends to the ordinary house work; but she does not, in general, undergo any laborious occupation, such as cutting and carrying wood, until the lapse of two or three days. The second child is brought forth without difficulty, and the parent, after bathing, ties it to a board, after their usual manner, then proceeds with her daily work, as if nothing extraordinary had occurred.

"Mammary abscess is very rare; a squaw of the Sioux nation died with this complaint. Sterility, although it does occur, is not frequent, and seems to be mostly attributable to the husband, as is evinced by subsequent marriages of the squaws.

"The usual number of children, may be stated at from four to six in a family, but in some families are ten or twelve. Of these the mother has often two at the breast simultaneously, of which one may be three years of age. At this age, however, and sometimes rather earlier, the child is weaned by the aid of ridicule, in which the parents are assisted by visitors.

"The catalogue of the diseases, of both children and adults, probably bears a similar proportion to that of the white people, and is far less extensive and appalling. The summer complaint, so destructive to children in our region, appears to be uncommon with the Omahaw infants, but during their first year, they suffer more from constipation of the bowels, than from any other complaint, but which is occasionally remedied by passing a small piece of soap (which is obtained from the traders,) cut into the proper shape, into the rectum.

"Dentition seems to be productive of no great distress; the gums are never cut, but the teeth are permitted to force their way through; the shedding of the teeth is also accomplished without much difficulty; the milk teeth, being forced out by the permanent ones, either fall from the mouth, or are gently extracted by the fingers of the parent.

"Monstrous births sometimes occur, though rarely, and it is

not known that infants are ever destroyed by their parents in consequence of deformity, unless the degree of malformation is excessive. The Indians mention two monsters which were born in their village; one of these they represent as resembling a white bear; and the other a cray fish; they were both destroyed. The husband of the squaw who gave birth to the former, said that she must have had connection with a white bear, but she asserted that the production of the monster was ocasioned by a fright, which she received at seeing her husband suddenly, whilst he was personating that animal both in dress and gesture.

"The magi affect to converse with the fœtus in utero, when the mother perceives it to be uneasy; they also sometimes venture to predict its sex.

"Abortion is effected, agreeably to the assertions of the squaws, by blows with the clenched hand, applied upon the abdomen, or by repeated and violent pressure upon that part, or by rolling on the stump of a tree, or other hard body. The pregnant squaw, is induced thus to procure abortion, in consequence of the jealousy of her husband, or in order to conceal her illicit amours, to which all the married squaws, with but few exceptions, are addicted.

"The infant, when recently born, is of a reddish brown colour, but in a short time, it becomes whitish, though never so pure a white, as that of the children of white people; the change to the national complexion is then gradual, and independent of exposure, inasmuch as those parts of their bodies which are perpetually concealed from the light, change simultaneously with the face.

"The abdomen of the children protrudes very considerably; and the sole article of dress, which the younger boys wear during the warm season, is a small belt of cloth around the middle of the abdomen, leaving every other part of the body perfectly naked. In wintry weather they have the addition of leggings, mockasins, and a small robe."

"Futurity has no terrors to the dying Omawhaw, as he has no idea of actual punishment, beyond his present state of existence. He, however, regrets the parting from his family and friends, and sometimes expresses his fears that the former will be impoverished, when his exertions for their support, shall be withdrawn.

"The Wahconda is believed to be the greatest and best of beings, the creator and preserver of all things, and the fountain of mystic medicine. Omniscience, omnipresence, and vast power are attributed to him, and he is supposed to afflict them with sickness, poverty, or misfortune, for their evil deeds. In conversation he is frequently appealed to as an evidence of the truth of their asseverations, in the words Wahconda-wa-nah-kong, the Wahconda hears what I say, and they sometimes add Mun-ekuh-wa-nah-kong, the earth hears what I say.

"Whatever may be the notions of other Indian nations, we did not learn that the Omawhaws, have any distinct ideas of the existence of the devil; or at least, we always experienced much difficulty and delay, when obtaining vocabularies of this and some other languages, in ascertaining corresponding words for *Devil* and *Hell;* the Indians would consult together, and, in one instance, the interpreter told us they were coining a word.

"They say that after death, those who have conducted themselves properly in this life, are received into the Wanoch-a te, or town of brave and generous spirits; but those who have not been useful to the nation, or their own families, by killing their enemies, stealing horses, or by generosity, will have a residence prepared for them in the town of poor and useless spirits; where, as well as in the good town, their usual avocations are continued.

"Their Wahconda seems to be a Protean God; he is supposed to appear to different persons, under different forms. All those who are favoured with his presence become medicine men or magicians, in consequence of thus having seen and conversed with the Wahconda, and of having received from him some particular medicine of wondrous efficacy.

"He appeared to one in the shape of a grizzly bear, to another in that of a bison, to a third in that of a beaver, or owl, &c., and an individual attributed to an animal, from which he received his medicine, the form and features of the elephant.

"All the magi, in the administration of their medicine to the sick or afflicted, mimic the action and voice, variously exaggerated, and modified, of the animal, which, they say, is their respective medicine, or in other words, that in which the Wahconda appeared to them.

"When a magician is called to attend a sick person, he makes

preparations for the visit, by washing and painting with red clay; some of them dress fantastically, but others retain their ordinary apparel, which does not distinguish them from their neighbours; they take with them a dried gourd, or skin, in which are some pebbles or plumstones, to make a rattling noise; the medicine bag is also an indispensible requisite, not for the active properties of its contents, but for the mystic virtues ascribed to them.

"When in the presence of his patient, he assumes the proper gravity of deportment, and commences his operations by smoking his pipe, and talking to his Wahconda; after this preparatory ceremony, the medicine bag is opened, and the contents displayed, consisting of white and red earth, herbs entire or pulverized, &c. Portions of these are mixed with warm water, in small wooden cups, with which he is provided. Then, with a due degree of solemnity, he advances to his patient, and inquires into the nature of his ailment; he feels the part affected, with his hand, and in case of local pain, he scarifies the part with a flint, and proceeds to suck out the blood, having previously taken a small quantity of water in his mouth. He applies his lips to the wound, and sucks with great force, drawing a considerable quantity of blood, which he occasionally ejects into a bowl, in which some dirt or ashes had been previously sprinkled.

"He makes much noise in the operation, by inhaling, and expelling the air forcibly through his nostrils, and at the same time jerks his head from side to side, tugging at the part to facilitate the process. The depletion produced by this method, is sometimes so considerable that the patient becomes relaxed and pallid. Ulcers are often cured in the same manner, and those rude practitioners do not hesitate to apply their mouths to venereal ulcers, extracting from them the pus and blood with impunity.

"It has been remarked, that those practitioners have very tumid lips, and this remark is verified in those of Mon-cha-wahconda, or medicine grizzly bear, whom we have frequently seen.

"If the patient has no local pain, the magician administers some of his simples, sometimes internally, but generally by friction between his warmed hands, and the breast or abdomen

of the patient. At intervals during this operation, and after the termination of it, he rattles his gourd with violence, singing to it with great vehemence, and throwing himself into grotesque attitudes. All this is sometimes daily repeated, until the convalescence or death of the patient.

"A wealthy man, when sick, will sometimes send to a great distance for a celebrated practitioner, who, if not already engaged, removes with his family and lodge to the vicinity of the afflicted.

"The compensation for all this attendance, and powwowing, is proportioned to the violence and duration of the complaint, and to the wealth of the individual; it is frequently exorbitant, and consists of horses, kettles, blankets, &c., which, although they are never demanded, yet the magician does not fail to allude to some of them as objects of his wishes, and the gratitude of the patient seldom fails on this occasion. If the patient dies, notwithstanding all this necromancy, he is said to be summoned by the Wahconda, and the fee or present to the magician, is made by the relatives or friends of the deceased.

"These men sometimes pretend to the spirit of prophecy. One of them ventured to predict, that two squaws, who had recently married white men, would die in the course of a very short time, which he specified. The squaws being much alarmed at the prospect of approaching death, took with them some tobacco and other presents, and went in search of the prophet, in order to prevail upon him to intercede for them, with the Wahconda, and avert their doom. The husband of one of the squaws, a citizen of the United States, hearing of the occurrence, went to the lodge of the magician. He was surprised to see there the squaws perfectly naked before the magician, who had provided himself with a large kettle of warm water, and was himself engaged in squirting the water from his mouth, over their persons. The husband, incensed at what appeared to him to be nonsense and imposition, kicked over the kettle of holy water, and drove the squaws home to their lodges; but the magician having received the presents, which were the objects of his swindling cunning, pretended that his incantations had had the desired effect with the Wahconda, inducing him to spare their lives.

"Many are the impostures which these priests practise on

the credulity of the people. And although they are frequently defeated in their attempts to deceive, and justly punished for their hypocritical villainy, yet the advantage of experience seems to profit them little, and deception, practised under a new garb, often attains its ends. How can we wonder at this facility, with which a simple people are blinded, through the medium of their superstitious faith, when we know that infinitely more monstrous absurdities obtain the inconsiderate assent, or excite the fears of thousands of civilized men, in the most populous and enlightened cities of Europe and America, and that the horse-shoe, even at this day, is frequently seen, attached to the threshold of a door, as a security against the entrance of a witch?

"One of these magi acquired a high repute in several of the Missouri nations, by impressing them with the belief, that his body was indestructable to human power, and that if cut into a thousand fragments, and scattered to the winds, these portions would all promptly assemble together again, and become revivified, so that he would receive no injury from the operation.

"Trusting to his fame, on some slight provocation, he killed a squaw in the midst of her own people, and with the most unbounded confidence, surrendered himself to her exasperated relatives, declaring with exultation that they possessed not the power to harm him.

"Unexpectedly, however, they put his vaunted supernatural constitution to the test, by dividing his body into pieces, and scattering them about the vicinity of the village."

These volumes contain a very valuable body of facts respecting the natural history of the Western Country, and particularly its geology, a subject probably of greater interest than the geology of any other part of the world; and we regret exceedingly that our limits do not permit us at this time to extract largely from the rich mass of materials they contain. We hope to be able at some future time to return to this subject, and take advantage of the labours of these zealous devotees of science, in our endeavours to extend the knowledge of the natural history of this country. At present we can only add a few miscellaneous extracts from different parts of the work.

"In form, the Missouri Indian is symmetrical and active, and

in stature, equal, if not somewhat superiour, to the ordinary European standard; tall men are numerous. The active occupations of war and hunting, together perhaps with the occasional privations to which they are subjected, prevents that unsightly obesity, so often a concomitant of civilization, indolence, and serenity of mental temperament.

"From this representation of the physical man, it is obvious that our observations do not correspond with those of Humboldt, regarding the natives of Canada, Florida, and New Spain, in as far as he represents them with the 'squat body.'

"The forehead retires remarkably backward, and the posteriour part of the head (occiput) has a flatness of appearance, attributable, perhaps, to the circumstance of its having rested so constantly during infancy, on the surface of a board, or on the scarcely less yielding interposed pad or pillow. Yet that organ, to which, in the phrenological system, the seat of amativeness is referred, although not usually very prominent, is still marked and distinct.

"The fascial angle of the cranium has been represented by Blumenbach at 73 degrees, an obliquity which induced him to place the American Indian in his series of the varieties of the human race, as the fourth in number.

"But his observations were made upon the cranium of a Carib, than which people, as Humboldt justly remarks, 'there is no race on the globe in which the frontal bone is more depressed backwards, or which has a less projecting forehead.' This observation will not rigidly apply to the western Indian, who certainly possesses a greater verticality of profile. Agreeably to the mensurations of Doctor Hardan, a cranium, which we obtained on the plains of the Platte, exhibits an angle of 78 degrees—A Wabash male, 78°; female, 80°; and a Cherokee, only 75°.

"The hair is coarse, black, glossy, and dense upon the head, sparse and slender upon the chin, independently of the custom of extirpating it; but although the hair is certainly oval in its transverse section, yet we could not perceive that, in this respect, its proportions exceeded our own.

"The line of the direction of their eyes is nearly rectilinearly transverse, being in this respect intermediate between the arquated line of the eyes of the white man, and that of the

Indians of New Spain, who, according to Humboldt, have the corner of the eye directed upward towards the temples.

"The nose is generally prominent, and either aquiline or Roman, with the wings not more dilated than those of white men. This form of nose is so prevalent, as to be regarded as the most beautiful. It is no small compliment to tell a person that his nose is like that of a mule: and beauty is indicated in their language of signs, by placing an arquated finger upon the face in imitation of the aquiline curve. The *pug-nose*, and the more common form of the noses of the white Americans, of a concave outline, are regarded as remote from the standard of beauty.

"The lips are more tumid than those of the white American, but very far less so than those of the negro.

"The lower jaw is large and robust; the teeth are very strong, with broad crowns. The chin is well formed.

"The cheek bones are prominent, but not angular like those of the Mongul, and stamp a peculiarity on the contour of the face, characteristick of the American Indian.

"The expression of the countenance is austere, often ferocious.*

"Very few of them are left-handed: perhaps even a smaller number of them use the left hand in preference to the right, than is observable among white men.

"The squaw differs from the males, in having a more squat figure, or is shorter and more thick bodied, with a much broader face.

"The colour of the Indian is, according to Volney, that of the skin of smoked bacon ham. It is sufficiently obvious that this colour is independent of climate; those parts of the body, which are, and, agreeably to their representations, always have been, perfectly shielded from the action of the rays of the sun, from their youth upward, are, notwithstanding, of the same tint with the face, which is never covered.

"In walking they preserve a perfectly upright carriage of the person, without any thing of the swinging gait so universal with

* The gravity of the Indian is almost proverbial: he will smile, but he rarely laughs. He does not indulge in badinage, or unnecessary remarks respecting the weather, merely for the purpose of talking and generally addresses his companions in a low voice, and with few words, excepting in council, when his elocution is loud, rapid, and vehement: the voice is full, harsh, and somewhat guttural. The squaw not, unfrequently, offers a perfect contrast in this respect; in her vivacious demeanour shrill loquacity, and pleasant smile, and laugh, readily excited.

the white people, which is regarded by them as excessively awkward, and which they imitate in their sports to excite the merriment of the spectators, though not in the presence of those whom they thus ridicule.

"In stepping, the feet are universally placed upon the ground in a parallel manner with each other. They say that turning out the toes in walking, as well as turning them inward, is a very disadvantageous mode of progressing in high grass or in narrow pathways.

"The peculiar odour, diffused by the body of the Indian, seems to be caused, not so much by the cutaneous transpiration, as by the custom of rubbing themselves with odoriferous plants, and with bison grease. They also sometimes make necklaces of a sort of sweet-scented grass, and suspend small parcels of it about their persons. The various kinds of pigments, with which they overspread their persons, may also be partially operative in producing this effect; and the ninnegahe, which they are so constantly habituated to smoke, is doubtless another agent.

"The odour of the Indian is rather agreeable than otherwise to many, and that diffused by the persons of the Pawnee war party near the Konza village, increased by a profuse perspiration from the violence of their exercise in running, was rather pleasant to most of the members of our party. The Upsaroka or Crow Indians, are said to anoint themselves with castor.

"To the acute sense of smelling of the Indian, the odour of the white man is far from pleasant, and is often particularly remarked by the squaw to be offensive.

"Their sense of hearing is remarkably acute. Ordinary conversation amongst the men, as we have before observed, is conducted in a low tone of voice: often when you suppose, from the compass of the speaker's voice, that he is addressing a person at his elbow, he is, in reality, directing his discourse to one on the opposite side of the room, or at a considerable distance. The ordinary conversation of the women is in a much louder tone than that of the men. Partial deafness, however, is not uncommon.

"The memory of the Omawhaw is exceedingly retentive.

"The Omawhaw seldom renders himself unhappy with gloomy anticipations of the future, but almost literally takes

'no care for the morrow.' He will say to his squaw, 'cook what meat you have, for the Wahconda will give us more to-morrow, and if not to-morrow, next day, and if never, let us eat what we have got.'

"They have but little mechanical ingenuity; but an individual of this nation, who is now no more, without acquiring any knowledge of the white people, as far as we could learn, mended the guns and traps of his countrymen, when not too seriously injured. But they have not attempted to repair either, since his death." Vol. I—P. 282.

"The Cane* is no where met with on the Missouri; but its place is supplied by the equisetum hiemale, which, remaining green through the winter, affords an indifferent pasturage for horned cattle and horses: to the latter it often proves deleterious. The inhabitants of St. Genevieve placed their horses upon an island covered with rushes, where great numbers of them shortly after died; but it was observed that such as received regularly a small quantity of salt, remained uninjured. Of a large number of horses, placed on an island near the Nishnebottona, to feed upon this plant, no less than twenty were found dead at the end of five days. May not the deleterious properties of the equisetum hiemale depend, in some measure, on the frozen water included in the cavity of the stalk?" Vol. I—P. 82.

"The river of the Osages, so called from the well known tribe of Indians inhabiting its banks, enters the Missouri one hundred and thirty-three miles above the confluence of the latter river with the Mississippi. Its sources are in the Ozark mountains, opposite those of the White River of the Mississippi, and of the Neosho, a tributary of the Arkansa. Flowing along the base of the north-western slope of a mountainous range, it receives from the east several rapid and beautiful rivers, of which the largest is the Yungar, (so named, in some Indian language, from the great number of springs tributary to it,) entering the Osage one hundred and forty miles from the Missouri.

"In point of magnitude, the Osage ranks nearly with the Cumberland and Tennessee. It has been represented as navigable for six hundred miles, but as its current is known to be

* Miega macrosperma of Persoon.

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rapid, flowing over great numbers of shoals and sandbars, this must be considered an exaggeration. In the lower part of its course, it traverses broad and fertile bottom lands, bearing heavy forests of sycamore and cotton trees. We may expect the country along the banks of this river, will soon become the seat of a numerous population, as it possesses, in a fertile soil and a mild climate, advantages more than sufficient to compensate for the difficulty of access, and other inconveniences of situation." Vol. I—P. 85.

"The Boiling spring* is a large and beautiful fountain of water, cool and transparent, and highly ærated with carbonick acid. It rises on the brink of a small stream which here descends from the mountain, at the point where the bed of this stream divides the ridge of sandstone, which rests against the base of the first granititic range.

"The water of the spring deposits a copious concretion of carbonate of lime†, which has accumulated on every side, until it has formed a large basin overhanging the stream. This basin is of a snowy whiteness, and large enough to contain three or four hundred gallons, and is constantly overflowing.—The spring rises from the bottom of the basin, with a rumbling noise, discharging about equal volumes of air and of water, probably about fifty gallons per minute, the whole being kept in constant agitation. The water is beautifully transparent, and has the sparkling appearance, the grateful taste, and the exhilarating effect of the most strongly ærated artificial mineral waters.

"Distant a few rods from this, is another spring of the same kind, which discharges no water, its basin remaining constantly full, and air only escaping from it. We collected some of the air from both of these springs, in a box we had carried for the reception of plants, but could not perceive it to have the least smell, or the power of extinguishing flame, which was tested by plunging it into lighted splinters of dry cedar.

* Among the Rocky mountains, near the Platte river.

† It is well known, that water in which carbonick acid is dissolved, has the power of holding in solution, a portion of lime, somewhat proportioned in quantity to the acid. In this instance, the water no sooner comes in contact with the atmosphere, than it parts with a portion of its fixed air, consequently losing the power of holding in solution the lime, which is immediately deposited. The lime may perhaps be derived from the cement of the sand rock, or possibly from the granite. Captain Hodgson found a rivulet among the high and exclusively granitic mountains of the Hymalaya, near the sources of the Ganges, so impregnated with calcareous matter, as to deposit an incrustation on very thing it touched. See "Annals of Philosophy, for July, 1822," p. 36.

"The temperature of the water of the larger spring at noon was 63°, the thermometer at the same time in the shade, stood at 68°; immersed in the small spring, at 67°. This difference in temperature, is owing to the difference of situation, the higher temperature of the small spring, depending entirely on its constant exposure to the rays of the sun, and to its retaining the same portion of water, while that in the large spring is constantly replaced by a new supply." Vol. II—P. 23.

"The Indians of the Missouri sometimes go to war in small parties against the grizzly bear, and trophies obtained from his body are highly esteemed, and dignify the fortunate individual who obtains them. We saw on the necks of many of their warriours, necklaces composed of the long fore claws, separated from the foot, tastefully arranged in a radiating manner, and one of the band of Pawnee warriours, that encountered a detachment of our party near the Konza village, was ornamented with the entire skin of the fore foot, with the claws remaining upon it, suspended on his breast.

"It is not a little remarkable, that the grizzly bear which was mentioned at a very early period by Lahontan, and subsequently by several writers, is not even at this day, established in the Zoological works, as a distinct species; that it is perfectly distinct from any described species, our description will prove. From the concurrent testimony of those who have seen the animal in its native haunts, and who have had an opportunity of observing its manners, it is without doubt, the most daring and truly formidable animal, that exists in the United States. He frequently pursues and attacks hunters, and no animal whose swiftness or art is not superiour to his own, can evade him. He kills the bison, and drags the ponderous carcase to a distance, to devour it at leisure, as the calls of hunger may influence him.

"The grizzly bear is not exclusively carnivorous, as has by some persons been imagined, but also, and perhaps in a still greater degree, derives nourishment from vegetables, both fruits and roots; the latter he digs up by means of his long fore paws.

"That they formerly inhabited the Atlantic states, and that they were then equally formidable to the Indians, we have some foundation for belief, in the tradition of the Delaware

Indians, respecting the Big Naked bear, the last one of which they believe formerly existed east of the Hudson river, and which Mr. Heckewelder assures us, is often arrayed by the Indians, before the minds of their crying children, to frighten them to quietness.

"Governour Clinton in the notes appended to his learned *Introductory Discourse*,* says, "Dixon, the Indian trader, told a friend of mine, that this animal had been seen fourteen feet long; that notwithstanding its ferocity, it has been sometimes domesticated, and that an Indian belonging to a tribe on the head waters of the Mississippi, had one in a reclaimed state, which he sportively directed to go into a canoe belonging to another tribe of Indians, then about returning from a visit: the bear obeyed, and was struck by an Indian; being considered one of the family, this was deemed an insult, was resented accordingly, and produced a war between these nations.

"A half grown specimen was kept chained in the yard of the Missouri Fur Company, near Engineer Cantonment, last winter; he was fed chiefly on vegetable food, as it was observed, that he became furious when too plentifully supplied with animal fare. He was in continual motion during the greater part of the day, pacing backward and forward to the extent of his chain. His attendants ventured to play with him, though always in a reserved manner, fearful of trusting him too far, or of placing themselves absolutely within his grasp; he several times broke loose from his chain, on which occasions he would manifest the utmost joy, running about the yard in every direction, rearing up on his hind feet, and capering about. I was present at one of these exhibitions; the squaws and children belonging to the establishment ran precipitately to their huts, and closed the doors: he appeared much delighted with his temporary freedom, he ran to the dogs, which were straying about the yard, but they avoided him. In his round he came to me, and rearing up, placed his paws on my breast; wishing to rid myself of so rough a play-fellow, I turned him around, upon which he ran down the bank of the river, plunged into the water, and swam about for some time.

"Mr. John Dougherty had several narrow escapes from the grizzly bear. He was once hunting with a companion, on one

* V. Trans. of the New York Literary and Philos. Society.

of the upper tributaries of the Missouri, he heard the report of of his companion's rifle, and looking round, be beheld him at a little distance, endeavouring to escape from one of these bears, which he had wounded as it was advancing on him. Mr. Dougherty, attentive only to the preservation of his friend, immediately hastened to divert the attention and pursuit of the bear to himself, and arrived within rifle shot distance, just in time to effect his generous object; he lodged his ball in the animal, and was obliged to fly in his turn, whilst his friend, relieved from imminent danger, prepared for another onset by charging his piece, with which he again wounded the bear, and relieved Mr. Dougherty from pursuit. In this most hazardous encounter, neither of them was injured, but the bear was fortunately destroyed.

"Several hunters were pursued by a grizzly bear, that gained rapidly upon them; a boy belonging to the party, who possessed less speed than his companions, seeing the bear at his heels fell with his face to the soil; the bear reared up on his hind feet over the boy, looked down for a moment upon him, then bounded over him in pursuit of the fugitives.

"A hunter just returned from a solitary excursion to the Qui Court river, informed me at Engineer Cantonment, that going one morning to examine his traps, he was pursued by a bear, and had merely time to get into a small tree, when the bear passed beneath him, and without halting or even looking up, passed on at the same pace.

"Another hunter received a blow from the fore paw of one of these animals, which destroyed his eye and cheek bone.

"In proof of the great muscular power with which this animal is endowed, a circumstance related to us by Mr. John Dougherty, may be stated. He shot down a bison, and leaving the carcass, went to obtain assistance to butcher it, but was surprised on his return to find, that it had been dragged entire, to a considerable distance, by one of these bears, and was now lodged in a concavity of the earth, which the animal had scooped out for its reception.

"Notwithstanding the formidable character of this bear, we have not made use of any precautions against their attacks, and although they have been several times prowling about us in the night, they have not evinced any disposition to attack us, at that season.

"They appear to be more readily intimidated by the voice, than by the appearance of men." Vol. II—P. 54.

"The band of Kaskaias frequent the country about the sources of the Platte, Arkansa, and Rio del Norte, and extend their hunting excursions to Red River and the sources of the Brassis. The great number of images of the Alligator, which they wear, either as ornaments, or as amulets for the cure or prevention of disease and misfortune, afford sufficient proof of their extending their rambles to districts inhabited by that reptile. These images are of carved wood, covered with leather, and profusely ornamented with beads. They are suspended about the neck, and we saw several worn in this manner by the children as well as by adults. It was observed, likewise, that the rude frames of the looking-glasses, carried by several of the men, were carved so as to approximate towards the same form.

"It is, perhaps, owing to their frequent exposures to the stormy and variable atmosphere of the country about the Rocky Mountains, that these Indians are subjected to numerous attacks of rheumatic and scrofulous diseases. We saw one old woman with a distorted spine, who had, probably, suffered when young from rickets.* A young man of a fine athletick frame, had his neck covered with scrofulous ulcers. While he was with us, he was constantly endeavouring to conceal with his robe this afflicting spectacle. He remained but a short time amongst us, and did not make his second appearance.

"An old man came frequently to us with a diseased leg, informing us by signs that it had repeatedly formed large abscesses, which had discharged much matter, and afterwards healed. His frequent applications to us were made with the hope that we would do something for his relief.

"The men of this band wear the hair long, and suffer it to hang negligently about the shoulders. Some of them have a braid behind, which is garnished with bits of red cloth, small pieces of tin, &c., and descends nearly to the ground, being sometimes eked out with the hair of a horse's tail. Among

* Baron Humboldt saw no instance of personal deformity among the Chaymas, the Caribs, the Mayseas, or the Mexican, or Peruvian Indians, [Pers. Nar. vol. iii. p. 233.] and he thence concludes, perhaps hastily, "that bodily deformities are infinitely rare among those races that have the dermoid system highly coloured." This remark is not strictly applicable to the North American Indians, nor to the highly coloured descendants of African races, now so numerous among us. We saw, among the Indians of the Mississippi, several instances of deformity. Shawiskanan, a Sioux, who was exhibited at New York and Philadelphia in 1822, is more deformed than any white man we remember to have seen.

the old men, were several who had suffered a number of scattering hairs on the face to become of considerable length, a violation of good manners, and a neglect of personal neatness, not often met with among the Indians, and excusable only in the old. In their conduct towards us they were guilty of more rudeness and incivility than we had been accustomed to meet with among the savages of the Missouri.

"Though we saw much to admire among this people, we cannot but think them among the most degraded and miserable of the uncivilized Indians on this side of the Rocky Mountains. Their wandering and precarious manner of life, as well as the inhospitable character of the country they inhabit, preclude the possibility of advancement from the profoundest barbarism. As is common among other of the western tribes, they were persevering in offering us their women; but this appeared to be done from mere beastliness and the hope of reward, rather than any motive of hospitality or a desire to show us respect. We saw among them no article of food, except the flesh of the bison: their horses, their arms, lodges, and dogs, are their only wealth.

"In their marches they are all on horseback: the men are expert horsemen, and evince great dexterity in throwing the rope, taking in this way many of the wild boars which inhabit some parts of their country. They hunt the bison on horseback with the bow and arrow, being little acquainted with the use of fire arms. One of them, who had received a valuable pistol from a member of our party, soon afterwards returned and wished to barter it for a knife. They begged for tobacco, but did not inquire for whiskey. It is probable they have not yet acquired a fondness for intoxicating liquors." Vol. II—P. 112.

"The river* valley spread considerably a little below the point where we had encamped. In many places we found the surface a smooth and naked bed of sand, in others covered by an incrustation of salt, like a thin ice, and manifestly derived from the evaporation of water, which had flowed down from the red sandstone hills bounding the valley. These hills were here of moderate elevation, the side towards the river being usually abrupt and naked. The sandstone is fine, of a deep red colour, indistinctly stratified, and traversed in various directions by veins, filled principally with sulphate of lime.

* Platte.

"We have seen among the Indians, on the preceding day quantities of salt, in large but detached crystalline fragments, resembling the common coarse salt of commerce. It had evidently been collected from some place like the one above mentioned, where it had been deposited from solution in water. When we inquired the particular locality, the Indians pointed to the south, and said, it was found near the sources of a river rising in that direction." Vol. II—P. 114.

"Soon after we had mounted our horses in the afternoon, a violent thunder storm came on from the northwest. Hail fell in such abundance as to cover the surface of the ground, and some of the hailstones, which we examined, were near an inch in diameter. Falling with a strong wind, these heavy masses struck upon our bodies with considerable violence. Our horses, as they had done on a similar occasion before, refused to move, except before the wind. Some of the mules turned off from our course, and had run more than half a mile before they could be overtaken. For ourselves, we found some protection, by wrapping our blankets as loosely as possible around our bodies, and waited for the cessation of the storm, not without calling to mind some instances on record, of hailstones, which have destroyed the lives of men and animals. It is not improbable, that the climate of a portion of country, within the range of the immediate influence of the Rocky Mountains, may be more subject to hailstorms in summer than other parts of the continent lying in the same latitude. The radiation of heat from so extensive a surface of naked sand, lying along the base of this vast range of snowy mountains, must produce great local inequalities of temperature: the diminished pressure of the atmosphere, and the consequent rapidity of evaporation, may, in these elevated regions, also be supposed to have an important influence on the weather. We have not spent sufficient time in the country near the eastern border of the Rocky Mountains, to enable us to speak with confidence of the character of its climate. It is, however, sufficiently manifest that in summer it must be extremely variable, as we have found it, the thermometer often indicating an increase of near fifty degrees of temperature between sunrise and the middle of the day. These rapid alternations of heat and cold must be supposed to mark a climate little favourable to health, though we

may safely assert that this portion of the country is exempt from the operation of those causes which produce so deleterious atmosphere in the lower and more fertile portions of the Mississippi basin. If the wide plains of the Platte, the upper Arkansa, and the Red river of Louisiana, should ever become the seat of a permanent civilized population, the diseases most incident to such a population will probably be fevers attended with pulmonary and pleuritick inflammations, rheumatism, scrofula, and consumption. It is true that few, if any, instances of pulmonary consumptions, occur among the Indians of this region: the same remark is probably as true of the original native population of New York and New England." Vol. II—P. 124.

"On the 28th we arrived at the Hot Springs. The country near these, on the north and northwest, is high and rocky. The sandstone, which extends from the Arkansa to within a few miles of the Springs, becomes, toward the south, something inclined, and apparently of more ancient deposition, until it is succeeded by a highly inclined argillite. Both these rocks are traversed by large veins of white quartz. Their inclination is towards the south, and that of the argillite at a great angle. In some localities it is but indistinctly slaty in its structure, and its laminæ are nearly perpendicular. It contains extensive beds of a yellowish-white, silicious stone, often somewhat translucent, and resembling some varieties of hornstone. Its fracture is a little splintery, and sometimes largely conchoidal. It is of a close texture, but the recent surface is generally destitute of lustre. This rock affords the stones called Washita oil stones. It may with propriety be denominated petrosilex. This name is, however, to be understood as having the application given it by Kirwan, who uses it to designate the fusible varieties of the hornstone of Werner, and not the several varieties of compact feldspar, to which it has been sometimes applied. In passing from the Hot Springs, northeast to the Lead Mine country, about the sources of the Merameg, this rock is found to be intimately connected, and to pass by minute and imperceptible gradations into the flint rock of that district, which is decidedly secondary, and of contemporaneous origin with the compact limestone. About the Hot Springs, it is not distinctly stratified, but occurs in very extensive masses, some-

times forming the body of large hills, and is marked by perpendicular seams and fissures, often placed very near each other.

"The Hot Springs of the Washita are in north latitude 34° 31′, and west longitude 92° 50′ 45″* near the base of the south-eastern slope of the Ozark mountains, and six miles north of the Washita. They have been erroneously represented as the principal sources of that river, which are more than one hundred miles distant.

"We have been informed, that these remarkable springs were unknown even to the American hunters, until the year 1779. At that time, it is said, that there was but one spring discharging heated water. This is described as a circular orifice, about six inches in diameter, pouring out a stream of water of the same size, from the side of a perpendicular cliff, about eight feet from its base. At another place, near the top of the mountain, which rises abruptly towards the east, the heated water is said to have made its appearance near the surface of the ground, in a state of ebullition, and to have sunk and disappeared again upon the same spot. It is probable these representations are in a great measure fabulous. All we are to understand by them, is, that the gradual augmentation of the thermal rocks, which are constantly forming about the springs, has changed the position, and perhaps increased the number of the orifices.

"These springs were visited by Hunter and Dunbar in 1804, and the information communicated by them, as well as much derived from other sources, together with an analysis of the waters, has been placed before the publick by Dr. Mitchell.† They have been subsequently examined by Major Long, in 1818, from whose notes we derive the greater part of the information we have to communicate respecting them. They are about seventy in number, and rise at the bottom and along one side of a narrow ravine, separating two considerable hills of clay slate. A small creek enters the ravine from the north by two branches, one from the northwest, and the other from the northeast, flowing after their union nearly due south, and blending with the water of the springs, increasing rapidly in size, and acquiring so high a temperature, that at the time of

*Hunter and Dunbar. †See the New York Medical Repository.

our visit the hand could not be immersed in it. After traversing from north to south, the narrow valley containing the springs, this creek meanders away to the southeast, and enters the Washita at the distance of eight or ten miles. All the springs are within six hundred yards below the junction of the two brooks, and all, except one, on the east side of the creek.

We subjoin some particulars observed by Major Long at the time of his visit in 1818.* During the winter, the steam which rises from the springs, is condensed to a white vapour, which is often visible at a great distance.

"The water is limpid and colourless, and destitue, when cooled, of either taste or smell, and, according to the analysis of Dr. Mitchell, purer than ordinary spring water. It, however, deposites, as it comes in contact with the air, a copious sediment, which has gradually accumulated until it has become an independent rock formation of considerable extent. This rock appears to consist of flint, lime, and a little oxide of iron. It is often of a porous and vesicular texture, and the amygdaloidal cavities are sometimes empty, and sometimes contain very delicate stalacities. Hæmatitick iron ore occurs dissemi-

* On the first of January, 1818, the thermometer in the air, at sun rise, stood at 24°, at 2, P. M., 49°, at sunset, 41°.

Immersed in the water of the creek, below the Springs, at 61°, above 46°.

Temperature in Spring, No. 1. being the lowest on the creek, 122°. Water discharged, 4 gals. per min.

" No. 2, a few feet from No. 1, 104°, discharging 1 gallon per minute.

" No. 3, twenty-five yards from the last, 106°, discharging 2 gallons per minute.

" No. 4, six yards above the last, 126°, discharging 2 gallons per minute.

" Of a spring issuing from the ground, at a considerable distance up the side of the hill, 64°.

" Nos. 5, 6, and 7, 136°, 94°, 92°. These rise very near each other, the warmest being more elevated than the rest. They discharge about 8 gals. per min.

" No. 8, issuing from the ground, fifty feet above the level of the creek, uniting, as it rises with another, at 54°. Temperature of the mixture, 128°. Discharge of the two, 10 gallons per minute.

" No. 9, rising in the point of a small spur, sixty feet above the level of the creek, 132°. Discharges two gallons.

" No. 10, forty feet above the creek, 151°. Discharges ten gallons. Green bushes in the edge of this, which is the hottest spring.

" No. 11, three feet above the creek, 148°, discharging twelve gallons.

" No. 12, thirty yards above the last, 132°, discharging twenty gallons.

" Nos. 13, 14, 15, near the last, 124, 119, 108°, discharging four gallons each.

" No. 16, near the last, 122°, discharging three gallons.

" No. 17, the uppermost on the creek, 126°.

" No. 18, 126°; 19, 128°; 20, 130°; 21, 136°; 22, 140°.

All these are large springs, and rise at an elevation of at least one hundred feet above the creek. In the same area are several others, and, what is more remarkable, several cold ones. In many of the hot springs I observed bubbles rising in rapid succession, but could not discover any perceptible smell from them. Not only confervas and other vegetables grow in and about the hottest springs, but great numbers of little insects are seen constantly sporting about the bottom and sides.

The entire quantity of water flowing in the Creek, after it receives the water of the Hot Springs, may be estimated at from 900 to 1000 gallons per minute.

nated in every part; also extensive caverns sometimes filled with a bright red metallick oxide. Dr. Wilson, who has been sometime resident at the springs, informed us, that the continued use of the water occasions salivation, from which it has been commonly inferred that it contains mercury in solution.

"The time of our visit to the springs being one of very unusual drought, the quantity of water was somewhat less, and the temperature higher than ordinary. The time required to boil eggs as much as they usually are for the table, was fifteen minutes. In the same time, a strong cup of coffee was made, by immersing our kettle in one of the springs.

"A number of baths have been made, by forming excavations in the rock, into which the hot water is constantly flowing. By cutting off or increasing the supply, the temperature can be regulated at pleasure. Over some of these are built small log cabins, and in the neighbourhood are twenty or thirty huts, occupied at some seasons of the year by persons who resort hither for the benefit of the waters.

"Three miles northeast from the Hot Springs, is a large fountain of water of the ordinary temperature, forming the source of the small stream already mentioned, as flowing down from that direction. It rises from the summit of a little knoll six or eight feet in diameter, and divides into two streams, one of which flows towards the east, the other towards the west. Both, however, unite at the base of the knoll, and the brook flows thence southwest, between two petrosilicious hills, to its confluence with another from the northwest, to form the Hot Spring creek. The quantity of water discharged by this spring can scarcely be less than from eighty to one hundred gallons per minute. Immediately on the south rises a considerable hill, and the elevation of the spring itself above the level of the highest of the thermal springs, is thought to be not less than one hundred and fifty feet. The water is transparent, but has a perceptible metallic taste, and deposites upon the stones over which it flows a copious, rust-like sediment. The Spring is known in the neighbouring settlements as the "poison spring," a name which we are told it had received from the following circumstance, said to have taken place many years since. A hunter, who had been pursuing a bear, and was much exhausted with fatigue, arrived at this spring in the middle of

the day, and finding the water cool and not unpleasant to the taste, he drank freely of it, but immediately afterward sickened and died. His death was occasioned, probably, not by any deleterious quality in the water, but by the disease commonly induced by drinking too largely of cold water when the body is heated. The neighbouring inhabitants, however, imputed the hunter's death to some supposed poisonous property in the spring. Not long afterwards, a discontented invalid residing at the Hot Springs, came to a resolution of putting a period to his own life. This he concluded to bring about by drinking the water of the poison spring. He accordingly repaired to it, and after drinking as much as he was able, filled his bottle, and returned home. Instead of dying, as he had expected, he found himself much benefitted by his potation. Notwithstanding this discovery of the sanative quality of the water, the spring still retained its former name; it is now used without apprehension, and is much resorted to by people who visit the Hot Springs."

Our limits do not permit us to indulge in more copious extracts, and we have given enough to show the general character of these observations. Before we conclude we cannot avoid expressing our gratification on finding that nearly all the persons belonging to this expedition are active members of the Academy of Natural Sciences of Philadelphia, an institution which does honour to the scientifick character of America.

Since writing the above, another expedition commenced by Major Long has left Philadelphia, and we may promise our readers a new treat from their new observations. The persons composing this expedition are few in number, but when we recollect the enterprize of Major Long, the character of that able naturalist, Say, who is not less distinguished for those amiable qualities which make a man an object of universal regard, and, the high expectations which are entertained in relation to Professor Keating, who has given proof of the greatest enthusiasm in the cause of science, we have no doubt of their equalling the best anticipations of their friends.

ARTICLE IV.

NATURAL HISTORY.

Descriptions of INSECTS *belonging to the order* NEUROPTERA, Lin. Latr., *collected by the expedition authorized by* J. C. Calhoun Secretary of War, *under the command of* Major S. H. Long, *by* Thomas Say, *Professor of Natural History in the University of Pennsylvania and of Zoology to the Philadelphia Museum.*

GENUS PHRYGANEA. *L. Latreille.*

1. P. *viridiventris. Body* pale brownish; *abdomen* bright green; *feet* whitish.

Inhabits the Ohio river.

Body pale brownish, somewhat hairy, hairs cinereous; *head* white beneath; *eyes* prominent, chestnut brown; *antennæ* rather longer than the body, light brown, whitish at base; *pectus* white; *feet* white; *tarsi* of the intermediate pair of feet, dilated; *superiour wings* ciliatated, dusky or blackish, beyond the middle a few whitish spots somewhat arranged in two bands; *inferiour wings* dusky, immaculate; *abdomen* bright green.

Length to the tip of the wings 3-20ths of an inch.

" of the Antennæ 1-5 of an inch.

Observed at Cincinnati about the middle of May; is common but not very numerous.

2. P. *numerosa. Body* black; *antennæ* and *feet* pale brownish; *abdomen* with a rufous raised lateral line.

Inhabits the Ohio river.

Head transverse, narrow, black, with numerous cinereous hairs; *eyes* remote, prominent, hemispherical, black-brown; *antennæ* as long as the body, brown, basal joint hairy, black: *palpi* pale; *thorax* black with cinereous hairs; *feet* pale brownish; *wings* whitish brown, immaculate, nervures brown; *abdomen* black, posteriour margins of the segments pale rufous, lateral line of the incisures raised rufous; *tail* pale rufous.

Length to the tip of the wings 1-2 inch.

" of the body 3-10ths of an inch.

" of the superiour wings 9-20ths of an inch.

" of the antennæ 3-10ths of an inch.

This species appears in vast numbers early in May on the river Ohio. From the seventh to the 9th of that month, when descending the river, I observed them near each shore, flying

in opposition to the direction of the wind, and so extremely numerous that, having a white appearance when flying, they might be compared to flakes of snow, in a moderate fall of that meteor. They were most numerous on the seventh, and appeared to decrease in number daily.

3. P. *lateralis.* *Body* blackish; *wings* white; *superiour wings* spotted with brown; *eyes* dark reddish-brown; *feet* white.

Inhabits Shippingport.

Body blackish with cinereous hair above, and shaded with plumbeous beneath; *eyes* prominent, dark reddish-brown; *antennæ* and *mouth* pale; *thorax* black, with cinereous hair; *pectus* black, slightly cinereous or plumbeous; *feet* whitish; *wings* white; *superiores* slightly spotted with brown, a common spot on the middle of the inner margin, and several nearer the tip somewhat arranged into a band, the costal one of which is larger; *inferiores* white, immaculate; *abdomen* blackish, pale vitta each side, and a pale posteriour margin to the segments; *caudal appendages* white.

Length to the tip of the wings 2-5ths of an inch.
" of the body 2-10ths of an inch.
" of the antennæ 3-10ths of an inch,

This species appeared in very great numbers on the banks of the Ohio, near Shippingport, on the 21st of May. Judging from the small space of about half a mile on the Indiana side of the river, where I had an opportunity to see them, their numbers could be but little inferiour to that of the P. *numerosa*, which occurred a few days before, but of which a specimen was now rarely seen.

4. P. *semifasciata.* *Superiour wings* dark ferruginous, varied with black lines, a distinct black point on the inner basal angle; *inferiour wings* light ferruginous, semifasciate, with black.

Inhabits the United States.

Body, when recent, light olivaceous green; *head* dark ferruginous above; *eyes* dark brown, with a moveable black pupil; *mouth* pale; *neck* light green, a brown, transverse, elevated, hirsute collar in the middle; *thorax* above dark ferruginous, hairy, blackish each side; *feet* pale; *superiour wings* dark ferruginous, numerous opake, transverse, abbreviated, black lines, a very distinct small black velvet spot at the inner basal angle; *inferiour wings* light ferruginous, a black, dilated, angulated,

semifasciate line near the tip, and a black, anteriour spot nearer the inner margin; *pectus* pale brown.

Length to the tip of the wings 9-10ths of an inch.
" of body nearly 7-10ths of an inch.
" " antennæ 2-5ths of an inch.
" " superiour wings nearly 9-10ths of an inch.

A fine, large, but not very common, species. Several specimens occurred near the Falls of the Ohio river.

GENUS BAETIS. *Leach.*

1. B. *femorata. Wings* whitish; *nervures* deep brown, and margined with brown; *inferiour wings* subovate, hardly half as long as the superiour ones.

Length of body half an inch nearly.

Male: body brown; *abdomen* beneath whitish; *eyes* large, prominent, approximate, separated above only by a fissure; *thighs* banded with reddish-brown near the middle and at tip; *wings* snowy white; *nervures* brown and margined with brown, more particularly so at the base, middle and tip of their costal margins; *caudal setæ* hardly twice the length of the body.

Female: body brown; *scutel* yellowish, distinct; *venter* whitish; *eyes* distant; *front* prominently carinated; *wings* whitish; *nervures* brown, equally margined with brown; *inferiour wings* less than half as long as the superiour; *feet* pale brown, a reddish brown band and tip to the thighs; *caudal setæ* hardly as long as those of the male.

Caught at Cincinnati, Ohio, and did not appear in any considerable numbers.

GENUS CLOEON. *Leach.*

C. *posticata. Abdomen* pale green, behind brown; *thorax* black opake; *wings* white.

Inhabits Shippingport.

Eyes apparently four, approximate; *superiour ones* elevated, subpedunculated; *cornea* subdiscoidal, slightly convex, edge tinged with yellow; *inferiour ones* smaller, not elevated, longitudinally oval, dark reddish-brown; *thorax* deep black opake; *wings* pure white, immaculate, inferiour ones very small; *feet* pure white, anteriour pair slightly dusky at base; *scutel* elevated; *abdomen* pale bluish-green, hyaline, three terminal joints deep brown opake above; *setæ* two, long, pure white.

Length of the body 3-10ths of an inch.
" setæ 7-10ths of an inch.

A small and delicate species. Considerable numbers of them appeared on our boat May 21st, whilst at Shippingport. The contrast between the black and greenish colours of this insect is very striking; and the greenish portion of the abdomen is so diaphanous as to exhibit the movements of the interiour of the body.

GENUS EPHEMERA. *Latreille. Leach.*

E. *cupida. Body* black; *wings* dusky, inferiores pale, dusky at tip; *thorax* with three distant longitudinal blacker lines.

Inhabits Ohio river.

Male: body black; *front* carinated; *eyes* small, remote; *thorax* black, with a cinereous tinge, a longitudinal dorsal broad black vitta, and a lateral impressed line; *wings* dusky, inferiores pale, with a dusky tip; *feet* pale brownish; *tarsi* black; *anteriour feet* blackish; *abdomen* black, incisures beneath pale; *setæ* rather longer than the body.

Female resembles the male, but the eyes are large, contiguous, and brown, with each a smaller, longitudinal, black one on the inferiour orbit; *abdomen* black; *segments* above and beneath pale at the posteriour edge, a dorsal obsolete white line, and on each two divergent, abbreviated, obsolete, whitish lines, originating at the base of the segment, and terminating near the middle of its length; *setæ* longer than the body.

Length of the body of male 7-20ths, female 9-20ths of an inch.
" setæ " 2-5ths, " 4-20ths of an inch.

This species is rather numerous on the Ohio, in the neighbourhood of Cincinnati, the 15th of May.

GENUS MYRMELEON. *Linneus. Latrielle.*

M. *abdominalis.* Pale, testaceous, varied with black; abdomen very long.

Inhabits Arkansa.

Head and *thorax* pale testaceous, densely spotted and lineated with black; *antennæ* clavate, blackish, the segments tipped with testaceous; *nervures* varied with black and white; *feet* whitish, spotted with black; *abdomen* hairy, very much elongated, pale testaceous, with longitudinal black lineations, posteriour half blackish.

Length 1 and 1-2 inches; of the superiour wings 1 inch.

This we obtained near the Rocky Mountains. The abdomen of the female is not longer than the wings, and the latter have a distinct white spot near the tip on the costal margin.

GENUS BITTACUS. *Latreille.*

B. *stigmaterus.* Body yellowish; abdomen falcate; wings with an opake carpal spot.

Inhabits Missouri.

Body pale yellowish; *stemmata* large, frontal, placed triangularly, two superiour ones dusky; *front* with a blackish area between the stemmata; *maxillary palpi* blackish; *eyes* prominent, oval; *thorax*, between the origins of the superiour wings, with two convex, longitudinally oval elevations; *wings* nearly equal, pale yellowish, a subopake carpal spot near the tip of each; *abdomen* falcate.

Length to tip of wings 3-4ths of an inch.

Found near Fort Osage on the Missouri.

GENUS SIALIS. *Latrielle.*

1. S. *dorsata.* Body black, varied with rufous; labrum pale; thorax with a dorsal rufous vitta and anteriour and posteriour rufous incisures.

Inhabits the Ohio river.

Head blackish, with about six blacker spots; *labrum* pale, beneath pale yellowish; palpi black; *thorax* blackish, with impressed blacker lines, anteriour and posteriour incisures and dorsal vitta rufous, angles rather prominent; a pale obsolete line from the base of the thorax to the abdomen; beneath yellowish, disks of the segments black; *trochanters* yellowish; *wing nerves* deep black; *abdomen* black, segments above with yellow posteriour margins; *venter* pale yellow.

Length to the tip of the wings 1 and 3-4ths of an inch.

Numerous in May near Pittsburgh.

2. S. *immarginata.* *Body* black varied with yellow, or yellow varied with black; *wings* dusky; *nervures* brown immarginate; *thorax* transversely quadrate, posteriour angles somewhat rounded, disk somewhat rugose with impressed irregular lines, an impressed dorsal line, on each side of which is a slightly arquated one; *eyes* deep black-brown; all beneath yellow.

Inhabits the Ohio river.

Length to the tip of the wings more than one inch; male much smaller.

Pupa pale, varied with black; *abdomen* annulate with black at the bases of the segments; all beneath immaculate; *thighs*

with a black obsolete spot on the exteriour tip; *antennæ* and *setæ* pale rufous; *head* with a black band before the eyes which includes an undulated white line.

This species differs much in the distribution of its colours; it is generally entirely yellowish beneath, and sometimes also on the tergum; the thorax also has sometimes a yellow dorsal line, and sometimes a black one. It appears in considerable numbers towards the end of May.

3. S. *imbecilla.* *Body* pale green, *wings* white.

Inhabits the Ohio river.

Body pale green immaculate; *eyes* prominent, chestnut-brown; *stemmata* chestnut-brown, placed triangularly equidistant; *antennæ* dusky, hairy; *wings* greenish white, immaculate; *thorax* transversely oval, sculptured.

Length to the tip of the wings 7-20ths of an inch.

" of the body about 1-5th of an inch.

" of the antennæ 3-20ths of an inch.

Occurs in considerable numbers on the river Ohio, about the middle of May; I observed it at Cincinnati.

4. S. *bilineata.* *Body* pale greenish yellow; *thorax* bilineate; *head* with a black double converging line; *eyes* reddish brown.

Inhabits the Ohio river.

Body pale greenish yellow; *head* a double black frontal line, including the stemmata behind, converging and confluent before, and truncate at the anteriour stemmata; an obscure triangular spot on the clypeus; *eyes* deep chestnut-brown; *antennæ* dusky, pale at base; *thorax* with two equal, dilated, parallel, blackish vittæ; *scutel* bimaculate, spots blackish, placed transversely; *wings* white, nervures blackish; *tergum* black.

Length of the body and wings, from 2-5ths to 1-2 of an inch.

Found near Cincinnati, and occurs not unfrequently about the 15th of May. The obscure spot on the anteriour portion of the head is sometimes wanting.

From the New York Medical and Physical Journal.

Remarks *on the* Columba Migratoria, *or Passenger Pigeon.* By De Witt Clinton, Esq. L. L. D.

The Columba Migratoria, or Passenger Pigeon, is a bird peculiar to North America. It extends its migrations from Hudson's Bay to the Gulf of Mexico and it occupies occasionally that vast region which reaches from the Gulf of St. Lawrence to the Rocky Mountains. Its change of residence is not owing to the influence of heat or cold, of rain or drought, but is made with a view to the acquisition of food. The vast flocks in which this bird congregates, are unequalled as to extent. La Hontan says that the Bishop of Canada has been forced to exorcise them oftener than once, on account of the damage they do to the products of the earth. Weld, an English traveller, speaks of a flock eighty miles long flying over Lake Ontario; and Wilson, the great ornithologist, estimates one seen in Kentucky two hundred and forty miles long, a mile broad, and containing two thousand two hundred and seventy-two thousand pigeons, which would consume on a moderate allowance, seventeen millions four hundred and twenty-four thousand bushels of mast a day.

The gregarious habits and vast flocks of this bird will of course occasion a correspondent consumption of food; and it is therefore compelled to be constantly erratick, and to be among the feathered race what the nomades are among mankind. The rapidity of its flight is superior to that of the carrier pigeon, which has been known to pass from St. Edmundsbury to London in two hours and a half. At this rate, the Passenger Pigeon can travel seven hundred miles in twenty-four hours; and at the rate of a mile a minute, the same distance in less than twelve hours; and this velocity may account for undigested rice being found in its craw six hundred miles from the rice fields: but as this has been observed in the spring of the year, it must have been derived in that case from the gleanings of a former season, or procured at a greater distance, or confounded with the zizania aquatica of the western waters. The favourite food of this bird is the beech nut, and it prefers to establish its roosting quarters and its breeding place within the reach of this aliment. It also subsists on the acorn, chestnut, wild cherry, seeds of the red maple, and of some weeds, poke, and other

kinds of berry, buckwheat, and the principal cerealia. It resorts to the sea-shore and the salines of the west for salt, and it is frequently seen at the mineral springs of Saratoga enjoying the luxury of the waters.

This bird is in much request as an article of food: and in the spring it arrives at an opportune period for our markets, during a scarcity of domestic poultry, and in the interval after the consumption of most of the old stock, and before the maturity of the new brood. In the hard winter, as it is commonly called, of 1741, the weather was intensely cold from the middle of November to the latter end of March. The snow was six feet deep. The Hudson River was passed on ice at the city of New-York. The cattle perished; and the deer was starved for want of food. The prices of food and fuel were exorbitant, and the sufferings of the poor were severe. In this crisis, and five or six weeks earlier than the time of their usual appearance, flights of wild pigeons appeared in greater numbers than were ever before known, and which, by the abundance of the food thus afforded, greatly relieved the prevalent distress. This at the time was attributed to a special interposition of Providence, under a supposition that this bird is incapable of resisting severe cold; and this is now the general impression, which shows that its nature is not well understood. It has been seen at Hudson's Bay in the month of December, and large flocks were observed in Albany and the north-western parts of this state in January and February, 1819.

There are other errors with respect to this bird. It is generally believed, that it will not breed in captivity, and that it is incapable of domestication. And our distinguished ornithologist, Wilson, has unhesitatingly asserted, that it only has one squab or young at a time.

If this latter position were true, it would furnish an anomaly in ornithology. All birds of the Columba genus, have heretofore been supposed to produce by pairing, and to have two young at a time, generally a male and female. The male pigeon participates in the labours of nidification and incubation, supplies the female with food when on the nest, and assists in feeding the young. But where polygamy prevails among birds, the whole labour devolves on the mother. The domestick or exotick pigeon lays two eggs at a time; and our only in-

digenous birds of the Columba genus (besides the Passenger Pigeon) the turtle dove and the ground dove, do the same. Why then should the Passenger Pigeon be an exception? The male assists in building the nest, and occasionally relieves the female in incubation; and it is remarked, that in the breeding season, the two sexes are never seen together. This is owing to their divided labours: for the male makes up for the greater devotedness of the female to incubation, by occasionally supplying her and the young with food. We then can see no reason for so strange a departure from the general rule, attributed by Wilson to the Passenger Pigeon in the extent of its production: and when we further consider the prodigious flocks of this bird, transcending all other collections of birds, we cannot easily acquiesce in his opinion, especially as he admits that it only produces three or four times in a year. But there is no reasoning down facts, and this is a question of fact. On diligent inquiry, I am satisfied that Wilson has been misled by inaccurate information. Benjamin Wright, Esq., one of the principal engineers on the Erie canal, says in a letter dated the 14th of August, 1822, "Wilson is under a great mistake when ne asserts that the wild pigeon has but one young. I am confident of seeing, when a boy, two eggs in the same nest. In order to be certain that my memory was not treacherous, I have consulted Mr. Green, a man of observation, and famous for taking pigeons. He is also positive that two eggs and two young are often found in one nest. He says, that the nest is built with little twigs loosely put together, and that the eggs frequently fall through, but that he is confident of observing, when only one egg could be found in the nest, that the other could be discovered to have fallen out of it." Mr. Wright, some months after this communication, informed me that subsequent inquiry had confirmed, in this respect, the accuracy of his impressions.

David Thomas, Esq., another principal engineer and a distinguished naturalist, in a letter, dated 22d of August last, says,

"I have not ascertained any particular fact relative to the young of the wild pigeon, though the common opinion is that it has two at one time."

But to remove all doubts on this question, I shall now mention an experiment successfully tried by Mr. Paul Clark, a respectable citizen of Albany.

This gentleman informs me that he has frequently seen in the woods, two eggs and two young in the nest of the wild pigeon. He has tried, for many years, to breed pigeons from those caught in the net, and has never succeeded. At last it occurred to him to vary the experiment. He took a female squab from a nest in the woods and brought it up in a cage. He put with her a male which had been taken in a net, but having been caged for three years, it was quite tame. They were placed in a wide and high coop, about which they could fly, and a small pine tree was planted in it, upon which they built a nest and bred, and their offspring, kept in a similar way, have also produced. Last year two pair began to breed in May, and continued until September. One pair produced seven, and the other eight times. Thirteen of the young survived. They laid sometimes one, but oftener two eggs for the same sitting. The confinement prevented, in Mr. Clark's opinion, a greater increase. In twenty-three days from the laying of the eggs, the young ones could fly; and in eight days from their being hatched, they are completely feathered, and fly from the nest: whereas the tame pigeon is hardly feathered in eight days, and, according to a memoir of M. Tessier, to the Royal Academy of Sciences, of Paris, its period of incubation is from seventeen to twenty days. Latham, in his general Synopsis of Birds, says, that the domestick pigeon, Columba domestica, or Columba Oenas of Linnæus, has, in its wild state, not more than two broods in a year, but after being domesticated, ten or twelve: other writers say but eight or nine.

The difference between our wild pigeon, and the tame pigeon in its wild state, is, as to productiveness, greatly in favour of the former. It breeds, it is believed, twice as often; its period of incubation is shorter; its produce the same as to number, and its young arrive sooner to maturity, and, in an unreclaimed state, it vastly transcends the pigeon of the old world in number. If Mr. Clark's experiment shall be more extensively realized, so as to secure the residence of the American pigeon in an open pigeon-house, then it will be an important addition to our domestick poultry. This is its appropriate climate, and domestication will enlarge its size, and augment its productiveness. The parent stock of the tame pigeon, and all its twenty beautiful varieties of carriers, pouts,

nuns, owls, fan-tails, tublers, &c. is the stock dove, or Columba Oenas; and this bird, in its wild state, does not exceed thirteen and a half inches in length, and twenty-two in breadth; whereas, our wild pigeon is sixteen inches in length and twenty-four in extent.* Domestication will have the same effect on the character and beauty, plumage and variety, fertility and usefulness of our wild pigeon, as it has had on that of the old continent. According to Pliny, if you suppose two pigeons to hatch but nine times a year, they may produce, in four years, fourteen thousand six hundred and seventy young. Our pigeon, if Mr. Clark's experiment fully succeeds, will be more productive.

The tame pigeon is whimsical and fluctuating in its attachments to home. It prefers, according to Buffon, elevated buildings, and habitations on elevated ground. Trifling circumstances will sometimes induce it to abandon its home, and it has even been known to change its partner in the most capricious manner. A person in Albany had two tame pigeons in a coop: the female was on the nest. A strange female visited the inside of the coop, and a courtship took place with the male, which was resented by the wife, who came out from her nest and made a great noise. Finding her efforts unavailing, she left her house in the course of a week, and the stranger occupied her place. What is called a *salt-eat*, which is composed of loam, old rubbish, and salt, will entice pigeons to remain where they are, and allure them from other places. Assafœtida, common salt, and a looking glass, are said to have a similar effect, and plenty of food deposited in their houses, will check their truant propensities.

Although some birds are peculiarly wild, and have never yet been domesticated, yet it may be observed, generally, that they are more tameable than quadrupeds. The latter flee from man, while the former gather round cultivation. The attainment of food is the efficient cause of this approach to the habitations of men; and, if Mr. Clark shall, by proper treatment, and a judicious application of appropriate allurements, carry his experiment to completion, as it respects permanence of residence, as well as breeding, he will be entitled to the credit of having tamed for the benefit of man, an animal

* Vide Montagu's Ornithological Dictionary, and Wilson's Ornithology.

more useful and productive, than its congener, the tame pigeon, which has been prized as an important acquisition since its first domestication. Columella says, that in ancient Rome, four thousand nummi, (which is upwards of one hundred and forty-three dollars,) have been given for a pair; and Pococke observes, that a pigeon-house is considered a great part of the estate of the husbandman in Egypt.

ARTICLE V.

MISCELLANEOUS.

FROM FOREIGN JOURNALS.

Notice of some human sculls, found in Germany, and a description of the head of a mummy, by H. De Blainville.

"A GREAT number of human sculls have been found in the neighbourhood of Halberstadt, in Saxony, which exhibit marked differences, when compared with the skulls of the European race, and considerably resemble those of the Copts. It is thought that they belonged to inhabitants of the primitive or antediluvian world. The most remarkable peculiarity in these sculls, is that they have no incisor teeth, all the teeth being grinders; it is hence inferred that the sculls belonged to a frugivorous race."

Observations by De Blainville.—We give this scientifick news as it was related in the common papers, with a view to attract the attention of anatomists to a comparison of these very ancient sculls, which are occasionally found. We are far from sure that those in question are fossile, since nothing is said of the place where they were collected. As to the absence of incisive teeth, and even of the canine, as it is stated that none but grinders exist, if this be certain, it is more than probable that it is merely accidental. It appears more reasonable to inquire about that disposition of the incisor teeth, which seem to be deficient in the sculls of Egyptian mummies, though as much worn as the grinders, as observed by Sænnering, and as I had occasion to remark in the beautiful heads of mummies brought last year from Cairo by M. Tédérat. As these mummies have been very carefully freed, not only from

their envelopes, but from their preserving matter, and all the the parts of the face being in a good state, I shall subjoin a succinct description.

The skin of these mummies appears tanned; the hair being well preserved, somewhat short and curled, though they do not seem to be woolly. The skin and all the parts of the face are in perfect preservation; that is to say, the eyes, ears, lips, and tongue itself, though whole, are black or of a very deep brown.

The head or scull has appeared to me smaller than in the European race, and especially the forehead which is quite narrow; the temporal fosse not deep; the eyes large, or rather the commissure of the eyelids very long; the orbits broad, not high. The profile however is not that of a negro,* although something like that race. The nose, without being very flat, is still a little hooked. The mouth is large and long; the lips were apparently not thick, but the mouth advances somewhat by the inclination of the anteriour teeth. The inferiour teeth meet the superiour; the incisors are much worn and cut square, as are the canine; notwithstanding the chin does not project. The ears are attached pretty high, and have the lobula small.

Journal de Physique.

Observations on the Effect produced by the Bile, in the Process of Digestion. By B. C. Brodie, F. R. S., Professor of Anatomy and Surgery to the Royal College of Surgeons, &c.—Various opinions have been entertained by physiologists respecting the office of the liver. Some have supposed that the secretion of bile is merely excrementitious; others that the bile is intended to stimulate the intestine, and to produce a ready evacuation of the fæces; and another opinion has been, that the bile is poured out into the duodenum, that it may be blended with the chime, and, by producing chemical changes in it, convert it into chyle. The situation of the liver, connected as it is in every instance with the upper part of the alimentary canal, is unfavourable to the first of these hypotheses; but the last is rendered very probable by the circumstance of chylification

* The head of an Egyptian mummy, now in the Philadelphia museum, (formerly said to be the "head of Pompey," in New York,) is evidently that of a Negro. Although the envelopes have never been removed from the forepart, yet the flat retreating forehead and far-projecting chin cannot be mistaken even at the first glance.—Ed. W. Q. R.

taking, place just at the part where the bile flows into the bowel.

In order that I might arrive at some satisfactory conclusion on these points, I applied a ligature round the choledoch duct of an animal, so as completely to prevent the bile entering the intestine, and then noted the effects produced on the digestion of the food which the animal had swallowed, either immediately before or immediately after the operation. The experiment was repeated several times, and the results were uniform. Before I describe these results, it may be proper to make one further observation. The application of a ligature round the choledoch duct is easily accomplished, and with very little suffering to the animal; so that any derangement in the functions of the viscera, which follows, cannot reasonably be attributed to the mere operation. The division of the stomachic ropes, or terminations of the eighth pair of nerves on the cardia of the stomach, and the ligature of the whole extremity of the pancreas, are operations of much greater difficulty; yet it has been ascertained that neither of these at all interfere with the conversion of the food into chyme, or that of the chyme into chyle.

When an animal swallows solid food, the first change which it undergoes is that of solution in the stomach. In this state of solution it is denominated *chyme*. The appearance of the chyme varies according to the nature of the food. For example, in the stomach of a cat the lean or muscular part of animal food is converted into a brown fluid, of the consistence of thin cream; while milk is first seperated into its two constituents parts of coagulum and whey, the former of which is afterwards redissolved, and the whole converted into a fluid substance, with very minute portions of coagulum floating in it. Under ordinary circumstances, the chyme, as soon as it has entered the duodenum, assumes the character of *chyle*. The latter is seen mixed with excrementitious matter in the intestine; and in its pure state ascending the lacteal vessels. Nothing like chyle is ever found in the stomach; and Dr. Prout, whose attention has been much directed to the chemical examination of these fluids, has ascertained that albumen, which is the principal component part of chyle, is never to be discovered higher than the pylorus. Now, in my experiments, which were made chiefly on young cats, where a ligature had been applied so as

to obstruct the choledoch duct, the first of these processes, namely, the production of chyme in the stomach, took place as usual; but the second, namely, the conversion of the chyme into chyle, was invariably and completely interrupted. Not the the smallest trace of chyle was perceptible either in the intestines or in the lacteals. The former contained a semi-fluid substance, resembling the chyme found in the stomach, with this difference, however, that it became of a thicker consistence in proportion as it was at a greater distance from the stomach: and that, as it approached the termination of the ileum in the cæcum, the fluid part of it had altogether disappeared, and there remained only a solid substance, differing in appearance from ordinary fæces. The lacteals contained a transparent fluid, which I suppose to have consisted partly of lymph, partly of the more fluid part of the chyme, which had become absorbed.

I conceive that these experiments are sufficient to prove that the office of the bile is to change the nutritious part of the chyme into chyle, and to separate from it the excrementitious matter. An observation will here occur to the physiologist. If the bile be of so much importance in the animal economy, how is it that persons occasionally live for a considerable time, in whom the flow of bile into the duodenum is interrupted? On this point it may be remarked, 1st, That it seldom happens that the obstruction of the choledoch duct from disease is so complete as to prevent the passage of the bile altogether; and the circumstance of the evacuations being of a white colour, may prove the deficiency, but does not prove the total absence of bile. 2dly, That in a very few authenticated cases, which have occurred of total obliteration of the choledoch duct in the human subject, there has been, I believe, always extreme emaciation, showing that the function of nutrition was not properly performed. 3dly, That the fact of individuals having occasionally lived for a few weeks or months under these circumstances only proves that nutrition may take place to some extent without chyle being formed. In my experiments I found that the more fluid parts of the chyme had been absorbed, and probably this would have been sufficient to maintain life during a limited period of time.

In the prosecution of this inquiry, a circumstance occurred, which seems not unworthy of notice, although not immediately

connected with the subject of digestion. The ligature applied round the choledoch duct was always a single silk thread, the ends of which were cut off close to the knot. If the animal was allowed to live, he became jaundiced. The *tunicæ conjunctivæ* of the eyes were tinged with bile, and bile was seen in the urine. But at the end of seven or eight days, I found, in several instances, that an effort was made by nature to repair the injury done by the operation, and to restore the passage of the bile into the intestine. In these instances, on destroying the animal at the end of the above-mentioned period, and exposing the cavity of the abdomen, and then making and opening into the duodenum, I ascertained that on compressing the gall bladder the bile flowed out of the orifice of the choledoch duct in a full stream, in spite of the ligature. On further dissection, I found that a mass of albumen, (coagulable lymph,) had been effused, adhering to the choledoch duct above and below the ligature, and to the neighbouring parts, and enclosing a cavity in which the ligature was contained. The pressure of the latter had caused the duct to ulcerate, without adhesion having taken place of the surfaces which had been brought into contact; and the ligature, having been separated from it by ulceration, lay loose in the cavity formed by the albumen which had been effused around it. Into this cavity the bile might be made to flow from the upper orifice, and out of it into the lower orifice of the choledoch duct; and thus the continuity of the canal intended for the passage of the bile was restored. It is still more remarkable that the same thing happened even when two ligatures had been applied on the choledoch duct at some distance from each other.

The physiologist will not fail to observe the difference between the effects produced by a ligature applied to an excretory tube and a ligature applied to an artery or vein. A circumstance nearly corresponding to that which I have now mentioned, has been noticed by Mr. Travers, respecting the consequences which follow the application of a ligature round the intestine.* *Journal of Science.*

* See an Inquiry respecting the Process of Nature in repairing Injuries of the Intestines. By B. Travers. London, 1812.

Sketches of cases wherein the Essential Oil of Turpentine was administered for the Expulsion of Intestinal Worms. By JAMES KENNEDY, M. D., of Glasgow.——Essential oil of turpentine, on the evidence of diversified observation and experience, may now be regarded as one of the best and most certain means of procuring the expulsion of intestinal worms. These sketches are consigned to the repositories of practical pathology, with the object of contributing additional illustration of the virtues of a medicine so diffusive in its influences, and so efficacious by its powers.

Case 1st. March, 1815.—R. H., a lad in his sixteenth year, had already been two days sick and confined to bed. His disease, on examination, now displayed the chief symptoms of imflammatory fever,—pain in the frontal and temporal regions, in the course of the spinal column, and along the centre of either thigh; thirst, gastrick irritation, and constipated bowels; dry mouth, furred tongue, parched skin; pulse strong and accelerated; abdomen tumefied and intolerant of pressure; eye suffused and glossy, with dilated pupil, and great impatience of light. Twenty-four ounces of blood were taken from his arm, and a strong dose of calomel and jalap prescribed.

Next morning the symptoms were aggravated. During the night the patient was hot and agitated, and unable to sleep. He had three scanty liquid stools, and was much distressed with tenesmus and headach. At three different times, imperfect convulsions supervened, and these were preceded by grinding of the teeth, muscular spasms, flushings of the face, muttering, moaning, and horror. Reflection on the assemblage of morbid signs induced me now to ascribe to the fever a sympathetick character, and to refer its developement to the ascendancy of verminous irritation.

This case being deemed favourable for a trial of the anthelmintick powers of oil of turpentine, an ounce of that medicine, in a sufficient quantity of sweetened milk, was administerd at noon, and another dose of the same strength, with an equal proportion of castor-oil, in a similar vehicle, at the end of four hours. About five o'clock, P. M., the patient began to experience severe gripes, with giddiness and intellectual confusion. Before six, a profuse perspiration took place, and the functions of his bowels were actively resumed. With much pain and

straining, he obtained a copious discharge of liquid, scybalous, muculent* fæces, along with which, an intervolved mass, composed of twenty-one *dead* lumbrici, and a countless number of ascarides, was expelled. The largest of the former measured eleven and a half inches in length, and, at the thickest, seven-eighths of an inch in circumference. Many of them were eight, the shortest three inches long. Five more of the first species were ejected in the evening, two during the night, and three on the following morning. Of the second, the number was very great. The worms, as well as the accompanying fæces, were strongly impregnated with a terebinthinate odour.

Half an once of castor-oil, in an anodyne draught, was exhibited at bed-time, and the young man enjoyed moderate rest through the night. His febrile symptoms gradually subsided; and in a few days, with the use of an occasional laxative, his health was confirmed.

Case 2d. September, 1815.—Mr. C. married, and in his thirtieth year requested my advice. This person is tall, fair, and thin. His habits are temperate, but he is considerably emaciated. His complaints are attended with the usual symptoms of alvine irritation. There is a perpetual sense of cold in his abdomen, accompanied with spasmodick twitchings in the umbilical region. His respiration is heavy and fitful; the odour of his breath and perspiration sourish and fœtid. He is teased with an incessant tickling of the pharynx, occasioning a dry, hoarse, frequent cough. The mucous membrane of his nostrils is overspread with the particles of a furfuraceous exudation. His urine has a milky appearance and consistence. His pulse is hard, rapid, irregular, intermittent. Violent palpitations of the heart often fill his mind with alarm; and he is debilitated by profuse discharges of blood from the nose.

At intervals, during the greater part of his life, this man has experienced distress from the excitement of alvine worms. Almost every remedy accounted vermifuge, whether of charlatanical or scientifick prescription, has been tried by him, without permanent benefit. Among others, the celebrated

* "C'est une erreur accreditee parmi les personnes qui, a toutes sortes de titres, ont soin des malades que les vers peuvent etre expulses dans un etat de decomposition ou de fonte, soit par l'effet des medicamens, soit meme par les seules forces de la nature: cette opinion doit etre laissee aux nourrices et aux garde-malades: ces pretendus vers fondus ou haches ne sont autre chose que des mucosites intestinales legerement congulees, ou des fragmens des substances alimentaires filamenteuses."—Lennec.

nostrum of Madam Nouffer, though submitted to fair and repeated experiment, was unavailing, and left him despondent of relief. He now consented to use the oil of turpentine as a last effort for health, and professed himself ready to take it, in whatever form it might be prescribed.

Conformably to this resolution, he swallowed two ounces of the medicine, in an aromatick solution of gum arabick, at the time of going to bed. Early in the morning, he awoke with oppressive headach, accompanied by giddiness, confusion of mind, and general agitation. An ounce of castor-oil, in a glassful of acidulated water, being now given to him, he replaced himself to rest. At the end of two hours, severe pains in the abdomen, which was much distended, and incapable of bearing the gentlest pressure, aroused him from an unrefreshing sleep. Forthwith, he had an enormous alvine evacuation, with the matter of which, sixteen lumbrici, and an astonishing swarm of ascarides, *all dead*, were commingled. In another, he expelled six of the former, and many of the latter kind. During the day, he passed several loose stools; but these did not dislodge any worms. Qualmishness, at the same time, and exhaustion, with a sense of inanition, remitting headach, and frequent tendency to perspire, annoyed him; while his urinary, intestinal, and cutaneous excretions, emitted a strong terebinthine smell.

Next night he repeated the medicine in an equal dose, and on the following morning took castor-oil. His feelings and condition were, on this occasion, little different from those he experienced on the preceding day. The first evacuation was copious: it contained four large lumbrici, and great numbers of the ascarides; and all of both kinds, as formerly, were quite dead. In the course of the day, his bowels were frequently moved, without any worms being expelled. The fæcal matter, however, was muculent, slimy, dark-coloured, and gave out the odour of turpentine.

This man took small doses of castor-oil on the four subsequent days; but it was nearly a fortnight before his headach and gastric disorder altogether ceased. Since that time to the present (February, 1821,) he has remained free from every symptom indicative of vermigenous disease.

Case 3d, May, 1816.—W. B., aged eighteen years, has for a

long period of his life been afflicted with convulsive paroxysms, bearing great affinity to those of epilepsy. His person is emaciated; his countenance pale, languid, anxious; his eye dull and watery. Depraved appetite and constipated bowels, alternating with diarrhœe, have long distressed him. His breath is fœtid, his mouth foul, his belly tense and swollen. During sleep, he grinds his teeth and utters loud moans, is restless and agitated. These and other circumstances seem to authorize the opinion, that his convulsive movements originate from intestinal excitement produced by the presence of worms.

For the purpose of expelling these noxious animals, an ounce of oil of turpentine, suspended in three ounces of sweetened milk, was given to him at bed time, and early next morning a repetition of the same dose. Awaking from a disturbed slumber, he experienced great oppression in the epigastric region. His mouth was dry, his breath tainted with the medicine, his thirst insatiable. Intense headach made him dull, peevish and spiritless. Globules of ungenial perspiration glistened in his forehead; his carotid arteries pulsated with extreme, almost audible violence. Diminution of sensibility supervened, and after some time, gave place to a convulsive paroxysm, in no degree different from those which he had heretofore sustained. This was followed by painful and repeated vomiting, and the matter thus disgorged was deeply impregnated with the flavour of the drug. He had only one stool during the day: it emitted a similar odour. With its contents, two lumbrici and several ascarides were intermingled.

At night, being disgusted with the medicine, he declined taking it; but, in its stead, received a solution of Epsom salts, which, on the succeeding day, produced two alvine evacuations imbued with a faint terebinthine scent. No argument could induce this person to proceed farther with the treatment, and he was, in consequence, left to appreciate the suggestions of his own mind.

After the lapse of two months, application was again made to me in this young man's behalf. His disease seemed not, in the interval, to have undergone any change. The original mode of treatment was again advised; and to this, on reflection, he yielded a reluctant assent. In compliance with this advice, he took an ounce of castor-oil in the afternoon, and a purgative

powder, containing calomel and gamboge, at the time of retiring to bed. Next morning he awoke about the dawn, and, on having a motion of his bowels, took one ounce of oil of turpentine in an aromatic emulsion. At the same time, the operation of his medicine was assisted by the liberal use of warm demulcent drinks.

Much unpleasant feeling, and several discouraging symptoms, but likewise some perceptible advantage, resulted from this exhibition of the remedy. Considerable nausea was excited, and headach, and thirst, and abdominal distention. Tendency to convulsions was not perceived: strangury, however, supervened, and discharges of bloody urine. Nevertheless, these soon subsided under the use of topical fomentations. The bowels acted frequently during the day, and, with a great quantity of slimy fæces, expelled many lumbrici, all dead, and imbued with the terebinthine taint. Two days subsequently, the same remedies were a second time administered, after being preceded by the warm bath. Similar phenomena, with the exception of strangury, were on this occasion elicited. The urine was nearly limpid: it had a pale yellow tinge, and, with the perspirable and fæcal excretions, retained the flavour of the medicine.

With the intervention of a few days between each trial, the same course of treatment was three other times repeated, with effects not particularly different. Numerous dead lumbrici, and many of them of a large size, were by these means dislodged; but no trace of ascarides could at any time be discovered. Up to the last mentioned date, the young man's convulsions are not known by me to have reappeared.

Case 4th. July 30th, 1817.—M. T., an active girl, seven years of age, was this day visited by me, at her parent's request. By their account, her health had been defective during the last twelve months. Her skin, at present, is hot and dry; her pulse small, rapid (126,) irregular. She has constant thirst; impaired appetite; headach; occasional hiccup; hoarse, frequent cough; muscular spasms. Sometimes she vomits her food; her bowels are often constipated, often morbidly free, often griped. A sense of coldness pervades her abdomen, particularly its umbilical region: it is distended and irritable under pressure. Oftentimes she starts in great alarm from an unre-

freshing and disturbed sleep, and utters piercing shrieks.—While asleep, her under lip is intermittingly agitated by tremulous motions. An evanescent blush plays upon her cheeks: her eye has a characterick wildness of expression; its scelerotick tissue is pearly white and glossy, its pupil languidly contractible; her whole physiognomy, indeed, is indicative of disease originating from excitement of the alimentary canal.

This girl was put under a course of alterative evacuants, which, in the space of one week, brought away very great quantities of discoloured, scybalous, muculent fæces, with the effect of relaxing the abdominal tension, and mitigating the cephalalgick pain. In other respects, her pathognomonick symptoms underwent little change. The same remedies were continued during another week, with the addition of the warm bath every second evening. Their operation, at the same time, was assisted by frequent frictions of the abdominal and lumbar regions with an ammoniated liniment combining turpentine and camphor. This treatment effected the dislodgment of much sordid fæcal matter, in which were found several detached pieces of tape-worm. Each of these was living, and varied in length from one to three inches. Little improvement of the patient's health, however, had as yet become apparent. Tæniæ affecting the alimentary system were now regarded as the chief source of all this young person's disorders, and for their expulsion the oil of turpentine was prescribed. For this purpose, she took four drams of the medicine mixed with an ounce of syrup of roses, after her having been immersed for fifteen minutes in a warm bath. The frictions were also continued; and, at the end of six hours, half an ounce of castor-oil was exhibited

About an hour after taking the medicine, she required to be placed in bed by reason of intense headach, vertigo, and a disposition to vomit. Anon, she unloaded her stomach by vomiting, and soon fell into a profound sleep, during which her body fell into a profuse perspiration. When she awoke, being more composed, her mother prepared a second mixture, and made her swallow it. Effects not materially different from those induced by the first dose, again supervened. The medicine, however, was with much difficulty retained, and free action of the cutaneous exhalants re-established. In the afternoon she received a purgative powder, which soon began to

operate. By this means, great quantities of ropy, offensive fæces were expelled; and in one of the dejections was found a piece of tænia, measuring four feet in length, and showing no signs of life. Next day the same treatment was repeated, with the most beneficial effects. In the course of three days, eighteen pieces of the worm were discharged from her bowels. These pieces varied from one inch to a foot in length; they were all dead, and more or less impregnated with the drug's odour.

Cathartick powders were occasionally administered to this patient during the five subsequent weeks, when their use was discontinued. For some time her alvine discharges contained many minute portions of lifeless tape-worm; but latterly these altogether disappeared, and the patient for many months remained in a confirmed state of health.

February, 1819.—About the commencement of this month, some fragments of living tænia being detected in the dejections of the same girl, she was again placed under my care. Her health at this time was imperceptibly affected: she took food, and amused herself with all the vivacity of a sprighrly child. Her complaints consisted solely of occasionally gripes and unpleasant tension, without enlargement, of the abdomen. With the object of ascertaining its helminthagogue virtues, in a different mode of exhibition, I now instituted a trial of the oil of turpentine in the form of an injection. Under my own direction, accordingly, a lavement, consisting of an ounce of the drug, and six ounces of tepid milk, was slowly and cautiously introduced. During its reception, she complained of acute pain in the bowels; but this was only momentary, and unaccompanied with any other troublesome sensation. After being retained about twenty minutes, the medicine was expelled, and brought with it a copious dejection, in which eight pieces of tape-worm, all dead, and of different lengths, were discovered. At the end of another twenty minutes, some urine was voided: its colour seemed natural, but it emitted a strong terebinthine smell. In two hours more, she had a second intestinal evacuation, from the contents of which two pieces of tænia were taken. Late in the same evening, a clyster, in all respects similar to the former, was carefully injected. This was immediately thrown back, along with a small proportion

of fæcal matter. It dislodged one short fragment only of the animal, and no disagreeable feelings were induced by its operation. The joints of the worm manifested no signs of life. The child afterwards took supper as usual, was put to bed, and slept soundly till morning. At an early hour, five grains of calomel were given to her, and in the course of the day, produced four free stools. With the first of these, two portions of tænia, dead, and each measuring five inches, were rejected. At my suggestion, her father, as soon as he rose from bed, ascertained the following circumstances:—her linen, a slip of flannel bound round her neck, her night-cap, and the contiguous bed-clothes, gave out a distinct smell of turpentine; her breath also, together with her urinary and alvine excretions, was deeply impregnated with the same odour. On the subsequent day, two additional pieces of the worm were voided by stool: they were dead, faded, and shrivelled. For several weeks my patient occasionally took aperient medicine; and at the time of my departure from Strathearne, in 1821, experienced no relapse of the disease.

Case 5th. June, 1821.—Mrs. J., the mother of a numerous family, and far advanced in life, had suffered during several years from a variety of complaints, which medicine hitherto had proved unable to remove. Her existing symptoms were, in chief,—unequal arterial action; nocturnal paroxysms of feverishness, accompanied with general disquietude and insomnolency; excess of bile in the circulating fluids; œdematous condition of the ancles and feet; obtuse fixed pain in the left hypochondriack region, increased by pressure; a deep-seated, elastick tumour, perpendicularly oblong, and large as a newborn infant's head, situating in the parts corresponding to the sigmoid flexure of the colon; successive developements of the hæmorrhoidal excrescence, giving rise to frequent small discharges of blood; coffee-coloured, sedimentous urine; occasional strangury; fits of the senile cough determining copious expectoration of yellowish frothy mucus; distaste of aliment; interchanges of constipation and liquid dejections; flatulency, with offensive eructations, and the more common symptoms of the dyspeptick and hysterical states.

Various modifications of alterative, deobstruent, and tonick medicines, with tepid and warm bathing, abdominal and ver-

tebral frictions, were employed during the eight subsequent months, as the means of mitigating or removing this person's complaints. Their best effects, however, produced only temporary and imperfect benefit; and relapses were, at all times, readily determined by causes apparently very little calculated to deteriorate her health.

Reiterated failure of these remedies ultimately gave rise to a suspicion that tænia, acting on the internal alvine surface, might be the source from which all my patient's constitutional derangements arose. With the design of proving this indication, therefore, and, at the same time, of forwarding her cure, it was forthwith resolved to administer oil of turpentine, and to promote its influences by the exhibition of a powerful co-operative evacuant.

Pursuant to this view of her treatment, six drachms of the medicine, suspended by agitation in two ounces of an aromatick infusion of rhubarb, were taken by the patient at noon and in bed; and, after an interval of three hours, the dose was repeated to the same extent. Fomentations of the abdomen were superadded, and, when another hour had elapsed, two drops of croton-oil, in a glass of sherry-wine, administered. In twenty minutes, acute intestinal spasms came on, and gradually increased. The bowels experienced a most distressing sense of distention, and an indescribable feeling was excited in the left lumbar region. By and by, a cold perspiration overspread the face and chest; tremors of the inferiour extremities succeeded; ringing of the ears ensued; the features at last became cadaverous, the eyes agitated by nervous motions; and the sufferer sunk in an alarming swoon.

By the use of analepticks and stimulants, she was soon restored to consciousness, and immediately (about fifty minutes after the croton-oil was taken) the bowels began to act. The matter of three evacuations presented no unnatural appearances: it emitted, however, the true terebinthine scent. That of a fourth, which soon followed, and was attended with exquisite pain, consisted almost entirely of an innumerable swarm of very small worms, lifeless, and floating in a thick muco-gelatinous fluid, tinged with a few streaks of florid blood. This fluid measured altogether more than three English pints.

The patient now replaced herself in bed, after having re-

ceived a mucilaginous anodyne draught. In the afternoon and course of the night, which passed away in unexpected tranquility, she expelled, in three additional dejections, a great number of the same kind of worms. They were all dead, suspended in the viscid mucus, and very sensibly impregnated with the odour of turpentine.

Notwithstanding the distress induced by our first attempt, my patient hesitated not to prosecute the same system of treatment. In consequence of this resolution, she took two drachms of the oil of turpentine, in different vehicles, with which a proportion of castor-oil was conjoined, on the mornings and evenings of alternate days, till the dose had been six times repeated. By the end of a week, this lady's circumstances were found to be exceedingly ameliorated. In the interval, great numbers of worms were expelled in occasional free evacuations. All her recent, and, at the same time, many of her original symptoms ultimately subsided, and the swelling in her left side no longer remained. By a varied management of her alimentary functions, this person, in the course of a few weeks, regained a state of health which withstood the atmospherick vicissitudes of winter; and its tenor has never since been so disturbed as to require the assistance of medicine.

Remarks.—By the evidence of these and similar cases, it is made probable that the essential oil of turpentine possesses virtues capable of fulfilling the chief indications of treatment in disease originating from the presence of worms in the alimentary canal. The principle on which these virtues depend does not seem, however, to be altogether distinguished by the true cathartic character. This medicine, according to my apprehension, contains some inherent quality of resisting absolute decomposition by the assimilative operations of the organs of nutrition, and passes along the intestines in a great measure unchanged. There the proper terebinthine* principle, whatever that may be, comes in contact with the parasitic animals, and, by the influence of its specific properties, deprives them of life. By this means they are brought into the state of inert matter, and thereby subjected to the expulsive action of the organ, whose cavity is the place of their production, and whose functions their existence disturbs.

* Turpentine offers a subject of curious and useful research to the investigators of vegetable chemistry.—K.

Each of the patients whose cases have been detailed, though in different degrees and at different intervals, after taking the medicine, experienced various unfavourable symptoms. Excitement or increase of headach, gastric disorder, nervous exaltation, convulsive movements, seem to have been induced by its action on the sentient tissues of the organs of assimilation. Strangury and emission of bloody urine were, on one occasion, an evident result of the drug's exhibition; but their presence was transient, and may, without infringement of philosophical rules, be regarded as a trivial exception to a general law. The cause, whatever it be, of the other unnatural manifestations, does not communicate effects permanently injurious to the system. It is even questionable whether these same manifestations do proceed from an internal use and agency of the medicine itself, or from the nervous exasperation produced by reaction of the disturbed animals when subjected to the influence of its specific powers.

Analogy, though at best but a trustless guide, may without unfairness be allowed to contribute the means of determining what amount of certainty is due to the foregoing surmise. For this purpose, let an ounce of the essential oil of turpentine, suspended in tepid milk, and sweetened with sugar, be given to a healthy adult; and, with careful observation, mark the result. This has been done several times by my particular direction, and the uniform consequence was,—the medicine, after being retained in the stomach, two hours at the longest, was rejected by vomiting. In most of the persons on whom this experiment was made, there could be no doubt of the cause of this rejection being in a chief degree dependent on the power of imagination fostered by the drug's unpleasant taste. Beyond the gastric irritation, no other symptom supervened in any of these instances; but, notwithstanding its presence in the alimentary organs was short, and its expulsion appeared in all of the cases to be complete, the turpentine had partially yielded to the effects of absorption, and its odour was perceptibly exhaled by the cutaneous, urinary, and alvine excretions.

When we have resolved on administering oil of turpentine for the dislodgment of parasitic worms, it may be requisite that, at the same time, we combine measures adapted to obviate the injurious effects which the medicine sometimes exerts in the

functions of the sanguineous and nervous systems. For this purpose, my own experience enables me to prefer the use of preparatory and consecutive evacuation. In the preceding histories, when the disease was intense and obstinate, these precautionary means are represented as having failed of producing advantage: in ordinary and milder instances, however, their beneficial tendencies will be apparent. Croton-oil, from the promptitude of its operation, may yet be so managed as to become an energetic agent in completing the expulsion of the dead worms, together with the helminthagogue drug, from the system, and thus prevent the distresses imputable, in a great degree, to absorption of the terebinthine principle.

Oil of turpentine, in young and delicate subjects, may be exhibited by injection. In this form, however, it is less efficacious, although less disagreeable. It acts with more energy, in this way, on that kind of worms which infests the excreting portion of the intestinal tube. Introduced, indeed, into the alimentary canal, in whatever way, the medicine seems to determine particular effects by means of its influence on the actions of the muciparous organs: by rousing the energies of these, when overpowered or exhausted, it contributes to restore, to their salutary proportions, the different secretions by which the processes of alvine evacuation are facilitated and renewed. When disease, moreover, depends in a chief degree on embarrassment, disorder, or subversion of the intestinal functions, an appropriate exhibition of this oil will be found materially beneficial in commencing or promoting that kind of reaction in the parts, wherewith Nature invariably strives to overcome the causes from which the disturbance of their health may have originated. For this purpose, as experience appears to show, it imparts by its proper efficacy, whatever that may be, a peculiar excitement to the nervous fibres, vascular ramifications, mucous follicles, and muscular fibres, throughout the whole extent of the alvine surface; and by the complicated impulse thus induced, becomes a powerful auxiliary in obtaining the recovery of functional balance which was lost.

Instructed by this view of the terebinthine properties, I am at present directing their employment in a most obstinate and protracted case of that disease, to which, with little apparent propriety, the name of *diarrhœa tubularis* has been applied.

Hitherto, many unfavourable circumstances have combined to encourage the hope of my patient's suffering being, at last, considerably mitigated. Be the results of the experiment, however, what they may, its detail is intended at some future period to constitute a brief pathological report, having for its object, to assist in discriminating the indications under which the essential oil of turpentine can be advantageously prescribed.

More than one circumstance in the case No. 5 will be admitted to involve considerable interest. The tumour situated in the patient's left side may, without impropriety be regarded as one of the encysted kind. It had local connexion with the colon; it was ruptured by the medicine's topical effects; its contents were thrown into the channel of the intestines; and there can be little doubt of its having been replete with a particular fluid, containing a multitude of parasitic worms. All these, when expelled from the bowels, were dead; and, with the utmost care, it was found impracticable to obtain even one of them in an entire condition. Subjected to careful observation under a common microscope, several of the most perfectly retained characters which they were observed to possess, induced me to consider them as mutilated fragments of the vesicular worm described by later helminthologists* under the generic designation *ditrachyceros*, with reference to the number and roughness, or *dieeras*, to the number only, of its horns.

Notwithstanding my own mind felt satisfied of the indentity between these and the rough double-horned worm originally discovered and described by Sultzer, and subsequently by Lesauvages, yet, from the necessarily imperfect nature of my observations on the disorganized remains of the animals, I do not find myself warranted in advancing this report as other than probable testimony to the facts in natural history which these philosophers had heretofore promulgated. As the subject, however, embraces matter alike amusing and instructive, the readers of the Repository may take interest in contemplating its chief features in the form of a descriptive sketch.

* Sultzer: Dissertation sur un Ver Intestinel, nouvellement decouvert et decrit sous le nom de Bicorne Rude, Strasbourg, 1801.—Deder: Anleitung zur Naturgeschichte der Eingeweidewürmer, Bamberg, 1803.—Laennec: Memoire sur les Vers Vesiculaires, a Paris, 1804.—Budolphi: Entozoorum, sive Vermium Intestilanium Historia Naturalis, 3 vols. 8vo. Amstelodami, 1810.—H. Cloquet: Dictionnaire des Sciences Medicales, Tome XXII. a Paris, 1818.—Lesauvages: Bulletins de la Societe de la Faculte de Medecine, Tome VI. p. 115.

History.—Dr. Sultzer's patient was a female, aged twenty-three years. From infancy, this person had been subject to frequent swoonings, and, since her seventeenth year, to a diversity of nervous affections. In her twenty-second year, these symptoms became very distressing; and, superadded to them, were an habitual languor and inappetency, obtuse colick movements, and a fixed pain in the left hypochondrium, which pressure or motion readily aggravated. Against these morbid indications she took a large dose of the family panacea,* a drastic quack medicine, with the effect of determining a "*superpurgation*" which continued nine days. This was accompanied with vomitings, violent cramps, and "colicks so frightful," as excite suspicions of her being poisoned. Subsequently to this occurrence, the "coliques soundes" and pain in her left hypochondrium never altogether subsided.

Some months after this, she had inflammation of the throat; and, as a remedy, swallowed a draught containing manna and sulphate of soda. This purgative, in the course of two days, procured the discharge of a "prodigious number of *bicornes rudes.*" Among all these, four only were found entire: the rest wanted their horns or external membranes; these parts, however, were detected separately in the fæcal matter. From this time her left hypochondriac region was quite free of pain, except when strongly compressed: by and by, uneasiness there entirely ceased, and the patient perfectly recovered.

Dr. Sultzer regards the whole tract of the intestines as the "habitat" of these animals. From analogy of their relations to other "vesicular worms," however, Dr. Laennec considers them as having been included in a cyst, which, by its ultimate rupture, threw them into the cavity of the alvine tube. This sentiment is founded chiefly on the pain which habitually existed in the left hypochondrium during the existence of the worms, and was probably caused by their presence, they having never reappeared after their expulsion. This "fixity" of the pain seems to him to indicate their confinement in a particular spot from which they could not escape; for worms, such as tæniæ and lumbricoid ascarides, which freely pervade all parts of the intestinal canal, carry signs of their presence into every place they successively occupy.

* La poudre d'Ailhaud.

Description.—Ditrachyceros constitutes a genus of vesicular worms: of this, one species only has hitherto been observed by naturalists. It is the *ditrachyceros rudis* of Sultzer, the *cysticercus bicornis* of Zeder, the *diceras rude* of Rudolphi, and, in his native idiom, the *bicorne rude* of the Strasburg Physician by whom it was first discovered.

This worm is of a fallow (*couleur fauve*) colour, and, including all parts, about four inches long. Its body is composed—first, of an exteriour, thin, floating membrane, enveloping it on all sides, without adhering to it, except in the proximity of its horns; second, of a stronger, thicker membrane, which is also attached to the roots of its horns; third, and of a sort of cyst or bag, smaller than the two former, and included in the cavity of the second. Each of its horns is thick as a horse's hair: both of them are conic, rugous, and somewhat flattened on the sides of their base, where they unite and form a sort of common trunk, which is very short, and moves in all directions as on a pivot. Examined with a microscope, the horns appear formed of a homogenous substance, pitted with cells which are larger as their site is nearer the base (*pedoncle.*) They are crossed longitudinally by a sort of line, consisting of brittle matter. Their surface is bristled with numerous pyramidal flakes.

The cavity of the body contains a limpid fluid, and its investing membrane, seen through a microscope, appears all over, both internally and externally, bestudded with tubercles, varying much in form, being oval, round, triangular, or trapezoidal, indented in their edges, and separated from each other by irregular depressions. The internal cyst is dark brown: both its surfaces are marked with deep wrinkles, but it contains no aperture, and is contracted into a point towards the back, where it is connected by adhesion to the inner face of its envelope.

London Med. Rep.

On the Morbid Influence of the Spinal Nerves. By R. P. Player, Esq.—1. In almost every disease of the upper and lower extremities of the neck, and of the trunk and its organs and viscera, preternatural tenderness may commonly be discovered on pressure between the vertebræ from which the nerves emerge which proceed to the affected parts, or those spinal branches which are more immediately connected therewith.

2. In diseases in which the circulation is much accelerated, in cases of diseases affecting important organs, and more particularly when occurring in old age, this symptom may frequently be discovered to extend along a considerable portion of the vertebral column.

3. Diseases of the head, and its organs, and of those to which the par vagum is distributed, appear primarily to be connected with, if not consequential on, this morbid state of one or more parts of the spine. The effects of remedies directed to the spine, seem to prove this. When organization is impaired, effects then become causes.

4. In many diseases, besides the existence of preternatural tenderness about the origins of the nerves which proceed to the affected parts, this symptom may also be discovered about the origins of one or more of the intercostal nerves on the left side of the spine beneath the scapula, and opposite the upper portion of the stomach.

5. In diseases of females, this symptom may, in like manner, be frequently found about the origins of some of the sacral nerves.

6. By the employment of remedies at these parts, some of our most obstinate diseases may be rendered comparatively tractable. For instance, *pain*, in general, may be almost immediately relieved; and the symptoms of gout, rheumatism, phthisis, and cancer, more effectually controlled than by any other means I am acquainted with.

7. The principal remedy is the abstraction of blood in a quantity proportionate to the vascular fulness of the patient. General bleeding being premised, when requisite.

8. Cupping is generally the best mode of removing vascular fulness from the origins of the spinal nerves; this must be repeated according to the recurrence of symptoms or the chronick nature of the case. The glasses should be much larger than they are usually made. Blisters, and similar remedies, become proper, after the due depletion of blood.

9. A recent fit of the gout may be cured by a single abstraction of blood proportionate to the plethorick state of the patient; but in this disease, the origins of the intercostal nerves, opposite the stomach, will commonly require to be relieved, as well as the origins of those which proceed immediately to the affected part or parts.

10. With this precaution, not only the phenomena of gout, but their cause also, appears to be removed; and if organization has not been impaired, the constitution to be completely relieved.

11. In cases of gouty affection of the stomach itself, the abstraction of blood from, or a blister applied over, the origins of the affected intercostal nerves, as the case may require, gives speedy and complete relief.

12. The preceding diseases are only adduced as examples of the advantage of directing remedies *to the spinal brain, and to the origins of the nerves which proceed to affected parts*, and to excite attention to the extensively beneficial application of which this practice appears capable in the relief and cure of *diseases in general*; but it is by no means intended to recommend it to the exclusion of other remedies.

13. Works on Pathology and Physiology, furnish numerous cases and experiments which tend to prove that *pain* and *disorganization*, as well as *impaired function* and *paralysis*, are consequent on causes which interrupt the due transmission of nervous influence to the affected parts. It has been very justly remarked that nature is sparing of causes, but profuse of effects.

Journal of Science.

Remarks on Abortion. By H. W. Ward, *Surgeon.*—If inquiries become interesting as the subjects on which they are made are intricate, the following will, I think, be allowed to be one of this number; and I trust it may be the means of causing the further investigation of a subject of such importance. The cause of the death of the fœtus in utero, is a subject which has for many years occupied the talent of many able men, and it has been referred to a great variety of sources; but the practice which a removal of these causes would in theory seem to warrant has, more frequently than otherwise, proved ineffectual: but, in those cases where the cause of the accident is apparent, it may sometimes be prevented; and, from an attentive consideration of this point it is that I am enabled to report the success of the mode of practice I have now to lay before the profession. And here, in justice to Dr. D. Stewart, an able obstetrick practitioner and lecturer, I acknowledge that I was in a great measure led to this plan of proceeding by learning from him the efficacy of opiate suppositories in preventing the death of

the fœtus in utero, by allaying the irritation of the bowels, which he considered the cause of it.

It was an idea entertained by that able practitioner, the late Sir Richard Croft, that diarrhœa generally preceded or accompanied abortions; but, with deference to that gentleman's opinion, I think diarrhœa is frequently the immediate cause of it: and why I entertain such an opinion, I shall hereafter point out.—Some time ago I was called in to attend a patient, who was in the fifth month of pregnancy, but had no pains that seemed to warrant any idea of labour. I was informed by her attendants, that she had never borne a living child, but had aborted three successive times, at this period of gestation; and, from the similarity of symptoms with which she was now attacked, they greatly feared a recurrence of the accident. I regretted that I had not been called in earlier, as a diarrhœa, which was always the most prominent symptom, had existed for four days. As my patient was extremely exhausted by the complaint, I ordered an aromatick cretaceous mixture, with opium; but, in less than eight hours, the fœtus was expelled, dead. The placenta was retained, as is common in such cases, longer than is usually the case in natural labours, and, after waiting an hour, I extracted it. No untoward symptom arose, and my patient recovered.

I was again called on to visit this patient, then also in the fifth month of pregnancy, and labouring under precisely the same train of symptoms as before detailed. As I considered it would be, perhaps, a more fortunate practice, I ordered a laxative draught with oleum ricini; which, however, produced no alteration in the nature or quantity of the alvine evacuations, and I again ordered the cretaceous mixture as before. Notwithstanding this, my patient still continued to labour under these symptoms. I then ordered the cretaceous mixture to be laid aside, and recommended the use of opiate suppositories, which I had hitherto known to be of great service in preventing similar accidents, arising from irritation in the bowels, which I was of opinion was the cause of all the mischief in this case. This plan, however, was attended with no good effect; and, fearing danger existed in delay, I also laid this aside, and wholly depended on large and repeated doses of opium, to be given with a view of allaying the irritation, and preventing a

recurrence of the accident. This had the desired effect of subduing the complaint: my patient went through the usual period of utero-gestation, and was delivered of a living child. In the former illness to which I was called, I have no doubt that uterine contraction had begun, and therefore the opium was of no avail; but it must be evident that, if opium be freely given before such action be set upon, it probably may—and I think I am right in saying, generally will,—be successful in preventing it. From what I have said in the preceding part of this paper, it will appear that, in the former illness, the diarrhœa did not abate, and abortion was the consequence; but in the latter, where it was checked by means of opium, my patient went through the usual period of utero-gestation, and was delivered of a living child; a circumstance which never before took place when the diarrhœa was unabated; and hence I think it reasonable to infer this was the cause of the former abortions.

I have said, where the cause of the accident is apparent, it may sometimes be prevented (for we know, if arising from a syphilitick taint, debility, or diseases of the uterus, it may be remedied,) by a removal of these causes: but, on the other hand, cases will occur where all our exertions will be foiled. Among them may be classed those we sometimes find, where the uterus will not allow a sufficient distension to go through the full period of utero-gestation: others, where the uterine vessels do not supply a sufficient quantity of blood for such purpose. And it will also be readily admitted that, where one abortion has taken place, it is generally the precursor to another.

The principal motive I have had in view, has been to stimulate those members of the profession, whose obstetrick practice is extensive, to a further inquiry into this important subject.

Lond. Med. and Phys. Journ.

On a new method of removing Ascarides from the human body. By William Howison, M. D.—The principal cause which gives rise to ascarides, is stated by medical writers to be, unwholesome food with bad digestion. The former, however, can scarcely be said to be the cause, as ascarides are not more prevalent amongst the lower orders of society, than amongst the higher; which undoubtedly would be found to be the case,

if the above remark was well founded. On the contrary, we daily meet with abundance of examples of ascarides in the higher walks of life, and amongst individuals who can command, and actually do subsist upon, the most nutritious diet.

Ascarides appear most frequently in individuals of a relaxed habit, and whose bowels contain a preternatural quantity of mucus, or slimy matter. Hence it is stated by medical writers to be a disease most common to children; but that they sometimes prevail in adults to a high degree, particularly in those who live chiefly on a vegetable diet. I know many individuals above adult age, who have been infested with ascarides for the greater part of their life; but I cannot say that it is peculiar to those living on vegetable food, having met with repeated instances of it in those subsisting upon animal diet, to which they were restricted by dyspepsia; and this disposition to ascarides evidently runs in families. I have known all the individuals in a family infected with them; and therefore am of opinion that they may be said to be hereditary, in the same manner as phthisis pulmonalis, mania, and scrofula.

It is not my intention in these pages, to consider the different means recommended for removing ascarides from the animal economy. We are all aware that, however actively employed, they are tedious, slow, and even uncertain in their effects; that some of them are violent; and that, when long continued, they tend to injure the organs of digestion. Of all of them, however, I may be allowed to say, that I have, in the course of my limited experience, seen most benefit from the administration of the powder of tin combined with the seeds of santonicum, followed up, at regular intervals of a few days, by doses of jalap proportioned to the age of the individual. And to this method I should always give the preference, during the period of infancy and childhood. The removal of ascarides, by means of irritating injections, (and it is only such that can prove effectual,) or by external applications, as tobacco, turpentine, &c. to the stomach and intestinal canal, appears to me to be inconvenient and indelicate; and the feelings of the people of this part of the world are such, that they will never submit to the use of injections, except in cases of such extreme urgency. The practice of the present day confirms this remark. Dr. Heberden says, a repetition of gentle purges alleviates whatever

uneasiness ascarides may occasion; but no internal medicines, nor clysters, can certainly be depended upon for extirpating them. Tobacco clysters and others made of solutions of sublimate mercury, have had little or no effect.

In suggesting the present method of removing ascarides from the human body, it is requisite to bear in mind the following circumstances: 1st, That these animals infest every period of life, from infancy to a later period than adult age; 2dly, That they are confined to the lower extremity of the intestinal canal, occupying principally, or entirely, that part of the gut extending from the point of the finger, when introduced completely within it, down to the sphincter ani; 3dly, That when removed every twenty-four hours, their future generation will be prevented by the obstruction of their means of propagation; 4thly, and lastly, That this method of removing ascarides, is inapplicable to the age of infancy.

The method of removing ascarides already alluded to, must be performed by the patient or individual infested by these insects, in the following manner. Previous to getting into bed, and when completely undressed for that purpose, he is to bring his body into the semibent position, by leaning considerably forwards, supporting himself by means of his left hand resting upon his thigh or a low table. Having previously besmeared the anus with melted candle-grease, which on such occasions is always at hand, or, what is preferable, with hog's lard, he is to cover completely the middle finger of his right hand with the same unctuous substance, particular care being taken to have the nail of that finger cut short, so as not to scratch or irritate the internal surface of the rectum. With his body in the position above described, he is next to introduce his finger gradually and cautiously up the rectum, until the hand, coming in contact with the sphincter ani, prevents its further introduction.

When the sphincter ani muscle is in a state of relaxation, which it generally is, this step of the operation will be effected with great ease, and without giving the slightest pain. When in a state of spasmodic contraction, which however seldom happens, it then becomes more difficult; and if this contraction should be present to a considerable extent, it will be proper to defer the introduction of the finger until it has completely gone off. The point of the finger within the rectum is then to be

rubbed along the whole inner surface of the gut, bringing it gradually downwards, untit it comes out at the anus, when the whole mass of ascarides occupying the rectum, will be brought out upon the finger near to its point, rubbed into the form of a ball enveloped in mucus and unctuous matter. The first bringing out of the finger, if properly performed, will be found to have removed the ascarides completely, as, upon repeating the operation a second or a third time, nothing will be brought down but mucus, thrown out in great quantity by the increased action of the glands of the gut, irritated by the second or third introduction of the finger.

This operation is to be repeated every night, when, in a short time, the gut will be completely cleared of ascarides. Their further means of propagation being removed, the symptoms produced by them will cease, and the individual be restored to perfect health. I may also remark, that when the ascarides have been several times removed in the above-mentioned way, they are observed to diminish in size; a proof that the older or full-formed ones have disappeared, and that they are succeeded by their offspring, which have not been allowed to come to maturity.

When the rectum is loaded with fœcal matter, some obstruction is offered to the introduction of the finger; and the intention of the operation, the removal of the ascarides, is considerably frustrated.

From what has now been stated, it is obvious, that ascarides can be removed from the intestinal canal by a manual, or, what may be termed, a surgical operation, altogether independent of the skill of the physician; and that it presents many advantages over the methods formerly in use. The suffering individual gets rid of the noxious animals, in which his disease consisted, without swallowing unpleasant medicines, which impair the organs of digestion, without wetting his belly by fomentations or liniments, and without distending the intestinal canal, by irritating injections.

Edinburgh Med. and Phys. Journ.

On the Products of Acute Inflammation. By Thomas Dowlel. —In John Hunter's excellent work on inflammation we find some opinions respecting the nature of the substances produced

by this process, and the conclusions which that indefatigable author formed, as far as they extended, were, I believe, nearly correct, although the products actually deposited were not made the subject of direct experiment.

Considerable ambiguity has existed respecting the nature of these animal substances from the various appellations which have from time to time been given to them. Thus, that which is commonly known by the name of "coagulable lymph," has been sometimes mistaken for coagulated albumen. The term "coagulable lymph," as applied to what we now understand by fibrin, is evidently a very improper one; for the word lymph, taken singly, has, I believe, been used to express the albuminous part of the blood, and this is very well known to be coagulable; coagulated albumen, therefore, and coagulable lymph, might be readily mistaken for each other, although these substances differ considerably in some of their properties. Lymph is also the name of the fluid which is contained in the absorbent or lymphatick vessels, and this is likewise said to be coagulable, although not spontaneously, as is the case with fibrin.

I shall endeavour to prove that it is this latter substance, or fibrin, which is deposited, in conjunction with serum, during the progress of the adhesive inflammation. Chemistry does not yet afford any *certain* means of distinguishing fibrin from albumen, in its solid state; it consequently becomes necessary to have recourse to its physical properties. From one of these properties the name of fibrin is derived, viz. its always exhibiting a fibrous or filamentous texture; a property which albumen cannot be made to assume, although it be rendered solid by heat, acids, alcohol, or the galvanic fluid, &c. Albumen, again, when coagulated into a mass, is very readily broken down between the fingers into a pulpy form; fibrin, on the contrary, will resist considerable pressure, being firm and elastick. But the principal distinction between these animal products, consists in the fibrin becoming solid spontaneously, when taken from the living vessels, whereas albumen has not this property.

When adhesive inflammation is taking place, the fibrin of the blood, together with the serum, seem to be secreted from the vessels: they are both thrown out in the fluid state; but the former has the property of becoming solid soon after it is removed from the influence of those vessels; and in so doing it

encloses between its fibres the serum, with which it had been secreted. This change begins to take place very soon after its escape from the circulating system, and does not appear to cease, till a considerable time after it has been removed from the body.

If a blister be applied to the surface of the skin, so as to produce much inflammation, it will occasion a greater or less quantity of adhesive matter to be secreted under it; this will be generally found at the most depending part, clearly proving that it had been thrown out in the fluid form, and had arrived at this situation by its gravitation. Here it gradually assumes the solid state, and during this change it retains between its fibres, (which appear to be flattened and extended) the serum, which is poured out at the same time; and it not unfrequently happens that the fibrin is so abundant, that the whole of the serum is enclosed in it, and that they form together, one solid and opaque mass. If, however, the quantity of fibrin is but small, the solid mass so produced, will be semitransparent, and have a gelatinous appearance; hence it is usually denominated a "gelly blister."

If the solid compound just alluded to be removed from the body, and pressed *strongly* in a fine linen cloth, the serum will be forced out, while the fibrous part remains; this fibrin I have chemically examined and compared with that of the blood, and could not find the slightest difference between them. The serum, so separated, will often contain a small portion of fibrin, which after a time will contract, and again render it of a gelatinous consistence. A substance of a gelatinous appearance is occasionally found about the external layers of the fibrin, in the aneurismal sack, which is probably formed in the same manner.

The solid substance, thrown out in consequence of the application of a blister, bears a great resemblance to the buffy coat of inflamed blood, the nature of which seems not to have been well understood. M. Deyeux supposed it to be fibrin, altered in its nature, so as to approach to that of gelatin. Fourcroy says, "I do not consider it as demonstrated, that the buffy coat proceeds from fibrin; it appears to me more natural to consider it as coagulated albumen, which carries with it a portion of fibrin, on account of its concressible power."

Again, Dr. Thomson in his work on inflammation, observes,

"that the buffy coat was boiled in water, but no solution of it took place; an event which must have happened, had it consisted of gelatine; it exhibited no properties, different from those of the ordinary lymph of the blood."

From the results of some experiments on the buffy coat which were made with a view to ascertain its composition, I am induced to differ in some measure from the opinions of the authors just quoted. The following was one method which I had recourse to, in which I endeavoured to avoid the use of of chemical re-agents, as they have been supposed, in such cases, to afford only equivocal results:—Eight ounces of blood were taken from a man who was labouring under rheumatism, and received into two four-ounce vessels; the one being allowed to rest, in order that a buffy-coat might form; while the blood in the other was kept in motion, to prevent its formation. After the lapse of twenty-four hours, the blood that had been kept agitated was washed, in order to separate the fibrin, which, when dried, weighed 12 grains.* The four ounces contained in the other vessel, being washed, and the fibrin collected and dried by the same means (having, however, the buff previously removed,) afforded only six grains; consequently, it might reasonably be supposed that the six grains wanting were existing, in some form or other, in the buffy crust. This was found to be the case; for, when it was submitted to pressure, a large quantity of fluid escaped; the mass became evidently of a fibrous structure; and, when dried, it weighed precisely six grains, making, together with the six which were obtained from the crassamentum of this blood, a number equivalent to that produced by the blood in the other vessel. The fluid thus pressed from the buff become solid by the application of heat, and consisted of common serum.

From this, as well as from other experiments, it appears that the inflammatory crust or coat of blood is not altered fibrin, as M. Deyeux thought it to be; neither is it coagulated albumen, as supposed by Fourcroy; nor does it consist entirely of coagulable lymph, as Dr. Thomson seemed inclined to consider it; but it is composed of a tissue of fibrin, containing between its fibres a very large proportion of fluid serum.

A red globule of blood is known to be formed of a smaller

* The proportion of the fibrin varies very considerably in the blood of different individuals, and in the same person at different times.

globule enveloped in a vesicle of colouring matter, which can be readily removed by water. The particle which thus remains is precisely of the same size as those of pus, and possesses properties so analogous, that I believe some physiologists have considered them as identical. If this be really the fact, the phenomena of common acute inflammation, when it attacks a part which is not glandular, may be very readily explained.

The modern improvements of the microscope, together with the invention of the micrometer, have afforded us an opportunity of measuring minute objects with accuracy; and Sir Everard Home has found that the particles of albumen, fibrin, pus, and the red globules, differ considerably with regard to their relative magnitudes.* Now, as these substances, when mixed with certain salts and a considerable proportion of water, form the blood, and as they are secreted in the order enumerated when inflammation is taking place, it may be conjectured that the deposition of each chiefly depends upon the diameter of the blood-vessel from which it is poured out. When inflammation takes place, accompanied with effusion, the substance that first escapes is serum; if the inflammatory action gradually increase, and, at the same time, the diameters of the vessels be enlarged, this is followed by fibrin, the nucleus of the red globule, or pus, and, lastly, by blood in an unaltered state, as is seen in the formation of a common abscess. We also find, that when this action is commencing, or exists only in a slight degree, serum alone is effused, as is well seen in hydrocele; but when this fluid is drawn off, and an irritating one injected, the inflammation increases, the vessels become still more enlarged, and serum, together with fibrin, is effused. When a blister is applied to the surface of the body, it irritates and causes inflammation; which, if slight, is accompanied only by a discharge of serum; if it be severe, adhesive matter will be thrown out; and if the inflammation be still more violent, a puriform effusion will take place.

These observations appear to be confirmed, in some measure, by the following circumstances. When inflammation attacks a part, the vessels of which are naturally of large size, it soon goes on to the formation of matter, if not checked by proper remedies; but, on the other hand, if the vessels be very small in the healthy state, they seldom have the diameters so much

* Philosophical Transactions for 1818.

increased as to allow of the passage of the particles of pus; consequently, when inflammation takes place in such vessels, it usually terminates in the effusion of serum, or of adhesive matter. When serous membranes become inflamed, the common products are secreted, which would seem to indicate that these parts do not possess a glandular structure; the blood-vessels, however, being naturally small, the inflammation seldom extends beyond that which terminates in adhesion.

I have used the term serum for one of the products of inflammation for the sake of simplicity; but the constituents of it vary considerably in their proportions to each other; for when it is produced by greatly increased action, it will contain a greater quantity of albumen than when that action is not so violent. This is exemplified in cases of serous effusions, in which we find that the proportional quantity of albumen differs according to the degree of inflammation present.

NOTE ON THE PRECEDING PAPER.

By John Bostock, M. D. F. R. S., &c. &c. One of the Vice Presidents of the Society,

"As an appendage to the above valuable paper, I beg to state, that I performed some experiments, in the years 1807 and 1808, on the chemical composition of the buffy coat of inflamed blood. The method which I employed was, to remove the layer from the surface of the coagulum, and, after placing it on an inclined plane, to subject it to a stream of water, by which all the soluble matters were carried off, without altering the texture of the insoluble part. The result was, that a quantity of albumen was removed by the water, while a substance was left which exhibited a fibrous texture, and which I concluded to be principally composed of fibrin. At the same time, its appearance, as well as the effect of chemical re-agents upon it, led me to doubt whether it was precisely similar to the fibrin of the blood; and I was disposed to think that a certain portion of coagulated albumen was united with it, and formed a part of its substance.

"The difficulty which I experienced in satisfying myself respecting this point, prevented me from laying my experiments before the Society, along with the others which I performed about this time; and I have never since had an opportunity of resuming them." *Med. Chi. Rev.*

AMERICAN INTELLIGENCE.

A case of Rupture of the Uterus during parturition, communicated by Dr. Joseph Gazzam, *of Pittsburgh, Pa.*

At 5 o'clock, A. M., October 17, 1822, I was requested to ride seven miles into the country, to visit a Mrs. H., in labour with her fifth child. On entering the house, I found the poor woman in great distress, and exceedingly importunate in her demands for relief. The account given by the midwife, was, that labour commenced at sun-set the preceding evening—the membrane ruptured at midnight, and the head continued to advance slowly until 3 o'clock, A. M., when the woman was suddenly seized with a violent cramp in the belly. At this moment the expulsive efforts of the uteras ceased, but the severe *cramp pain*, at and round about the umbilicus, continued. Alarmed at the threatening aspect of the case, the friends sent to town for me.

When I reached the house, the woman's countenance was anxious, her lips purple, pulse feeble and irregular, and respiration hurried. She complained of a sense of suffocation, was much troubled with flatulence, and was constantly tossing her arms and uttering low and short moans.

Upon making an examination, *per vaginam*, the head was found low in the pelvis, and apparently so situated that three or four good pains would have expelled it. Suspecting a rupture of the uterus, I enquired particularly, if at the moment the unusual pain had first been felt, a sensation of something giving way within had also been perceived by the patient? She replied, no—that if any thing of that kind had happened she was entirely unconscious of it. The absence of this symptom, which I had been taught to look for in every case of ruptured uterus, misled me for a short time, and I administered a tea spoonful of the *Secale Cornutum*, hoping to procure a recurrence of uterine action. I was disappointed in my expectations, and every moment the threatening symptoms becoming more urgent, I determined (after having waited half an hour) to deliver by the forceps. Just before doing this, I passed my hand over the abdomen, and felt very distinctly, through the abdominal pareties a foot and leg of the child. The true nature of the case was now no longer questionable, and by the aid of the forceps delivery was soon effected. The child was still born.

During my extractive efforts, the uterus acted feebly, but with sufficient force to make its efforts sensible to the patient, for she complained of bearing down pains while I was operating. The placenta was soon removed, partly by natural assistance and in part by uterine contraction. Friction with the hand over the abdomen was used; but still the uterus contracted very imperfectly, and did not present to the hand the firmness and globosity so desirable after every case of labour. A compress and bandage were now applied, and a full dose of laudanum administered. The pain, somewhat diminished after delivery, was still very severe, and having directed the use of fomentations to the belly, in case it should continue, I left my patient with the fear that she would soon yield to her impending fate.

As the case had excited much interest in the neighbourhood, and as I had told the husband that his wife would in all probability perish, I next day requested my friends, doctors Irwin and Church to see the patient with me. They both very kindly complied with my request. We found the belly now nearly as large as before delivery—the pulse feeble and irregular, and the woman complaining of excruciating pain and extreme tenderness over the whole of the abdomen. Urine had been passed freely, but there had been no discharge per vaginam, and it was pretty evident that internal hemorrhage and uterine and peritoneal inflammation were rapidly destroying the patient.

Desirous that all the medical gentlemen present should be perfectly satisfied as to the nature of the case, a critical examination per vaginam, was made by each of them at my request. This examination detected a rent in the uterus, extending from and through the os tincæ to as high as the fingers could reach, for the cavity of the uterus was so completely filled with coagula, as to make it inconvenient to trace the whole extent of the injury. The observations of my friends, I ascertained by my own examination, to be perfectly correct. It was only at the os tincæ and cervix uteri, that the rent extended through the peritoneal coat of the uteras. Above, this membrane maintained its integrity, and probably prevented the escape of blood into the abdominal cavity. Under these circumstances, the case seemed beyond the reach of remedial treatment, and the poor woman died on the evening of the 19th. The friends would not permit us to examine the body after death.

REMARKS.

Rupture of the uterus is an accident of such frequent occurrence—its results so uniformly fatal—and its early detection where it exists is of so much moment both to the patient and surgeon, that I trust I may be excused for obtruding this case upon the notice of the medical publick. In doing this, I do not hope to throw any additional light upon the nature of an accident so well understood, neither can I suggest any improvement upon the practice long since established, and were either of these conditions necessary to excuse a publication of this case, it should never have been presented to publick view. But, believing that when a surgeon is encompassed by great and inevitable danger, it is important for him to be early aware of its existence; believing, moreover, that this case affords another admonition (if indeed another were necessary to teach us) to beware of relying too implicitly upon the symptoms of diseases called by systematick writers *pathognomonick*, and believing furthermore, that this case may afford to the young practitioner of midwifery a hint not altogether valueless, I have ventured to lay it before the publick.

Hitherto we have been accustomed to consider among the pathognomonick signs of a ruptured uterus, that of the *feeling of something having given way within the patient.* The case just detailed, proves that this accident is not always attended by this remarkable symptom; and this sign was wanting also in a case that occurred last summer, in the practice of Dr. Church, of this city, reported in the Philadelphia Journal of Medical and Physical Science. Yet the highest authorities speak very positively upon this point. Burns says, "When this accident (rupture of the uterus,) does happen, the woman *feels something give way within her.*" James's edition of Burns, vol. 2, page 54. Dr. Denman, than whom higher authority on this subject and all others connected with the obstetrick art, cannot be mentioned, tells us, that "The rupture of the uterus is accompanied with a *sense of something giving way internally*, ALWAYS perceptible by the patient." Francis's edition of Denman, page 357. Ramsbotham, too, notwithstanding the accuracy of his observations and the admirable faithfulness of his descriptions, has unguardedly fallen into the same errour: "While the labour appears to be going on naturally, but slowly, the woman is

seized, in the middle of a strong expulsive effort, with an uncommon pain in some part of the belly: this pain is of a very different nature from those pains of labour under which the woman has hitherto suffered: she has never felt the like in any preceding confinement. The attack of this new pain usually occasions a shriek, and is accompanied with *the sensation of something having given way within.*" Dewees's edition of Ramsbotham, page 339.

Thus we see the most distinguished teachers agree in declaring that in every case of ruptured uterus, there is a sense of something giving way within the patient; yet, in the case of Mrs. H., related above, and in that of Mrs. D., reported by Dr. C., this symptom was wanting; and I think it but fair to conclude that it is one upon which much stress should not be laid. In connection with other signs, it should have due weight—but alone, it should not be much regarded; for we have seen that it does not invariably attend such accidents.

If there be any *single* symptom upon which much reliance may with propriety be placed, it is that of feeling the limbs or body of the child through the abdominal parietes; but this sign cannot be present except in those cases in which the rent in the uterus is extensive. In other cases, it will be safer to take all the symptoms in connexion. *We can thus form, in every instance,* an unerring index to direct us to a correct view of the nature of the case before us, and the appropriate practice to be pursued.

Vicarious Hemorrhage. Communicated by Dr. Wm. F. Irwin, *of Pittsburgh.*—Case 1st. Mrs. C——ll, the subject of this case, aged 52 years, of a thin, spare habit, tall, and of a sanguine temperament, came under my notice, while in attendance upon her daughter for abscess of the hip joint.

At different times during the period of my medical attendance upon her daughter, I had heard Mrs. C——ll complain of a bleeding from the point of the right thumb. Upon enquiry, I learned that the bleeding had first occurred about five or six weeks after her last menstruation, which had taken place sometime in the beginning of December, 1820.

She informed me that she had borne eleven children, had always menstruated regularly, and that, in one word, in her own person she had scarcely ever suffered from disease.

On enquiry, whether the thumb had recently suffered injury, she answered that it had not, nor could she recollect of having ever experienced any pain in the part, except when she was about ten years of age: at that time the thumb had been laid open by a surgeon in Scotland, for paronychia, and got perfectly well in the course of a few weeks. On examnation I discovered nothing worthy of attention, except a callous looking circumscribed depression on the point of the thumb, about a tenth of an inch in diameter, and which appeared as if a circular piece of the thickened cuticle had been neatly cut out in order to expose the cutis vera. Mrs. C——ll informed me that the depression had existed in its then state since the thumb had been affected with whitlow, and that she had never suffered any uneasiness in the part until sometime in the second week of January, 1821. The bleeding was then first observed, and was preceded by pain and uneasiness in the thumb generally, but more particularly in the callous spot. The slightest exertion of the fingers or thumb, putting the hand into warm water, or the exposure to heat of any part of the hand, would, in a few moments, induce profuse hemorrhage of arterial blood from the depressed spot.

As has been observed, menstruation had ceased from December 1820, and the bleeding from the thumb appears to me to have been substituted in place of the uterine excretion; for it has continued to recur, since its first appearance, with the same degree of regularity as her former monthly visitor, down to January 1822, when it also ceased and has since given no further trouble. During a considerable part of the time mentioned there were intervals of a week or ten days only between each paroxysm; but when the period arrived at which she had formerly been "unwell," the part became more tense and powerful, and the hemorrhage always more profuse. When the hemorrhage continued uninterruptedly for four or five days, the pain and uneasiness of the thumb ceased, and she also felt relieved from a certain disagreeable sense of weariness and oppression which she commonly complained of previous to the expected return of the catamcia.

As I had been requested to do something for Mrs. C——ll, I recommended V. S. with laxatives &c. To the part from whence the blood flowed, powerful stypticks, lunar caustick,

&c. were often applied, but with no other effect than a momentary cessation of the hemorrhage.

Case 2d. *Periodical Hemorrhage from an ulcer.*—In November, 1820, I was requested to visit Miss A. C——ll, aged 18 years, the daughter of the lady mentioned in case 1st, and prescribe for abscess of the hip joint. 'Tis unnecessary to detail the history of the case, or the mode of treatment pursued, suffice it to say, that the treatment was such as is recommended by the most experienced surgeons, and that it was successful. In the course of attendance, I was informed by my patient that she was much annoyed by a discharge of blood from the issue which had been established at the knee. This I at first supposed to arise from an irritable state of the ulcer and from the force used in introducing the fresh peas. But in this idea I was mistaken; for after minute enquiry into the circumstances of the case, I learnt that the hemorrhage occurred *only* at the periods of menstruation. At the commencement of the hemorrhage the blood was usually dark coloured and mixed with pus, but after a short time it became of a bright scarlet tint and looked much like arterial blood. Menstruation had been regularly performed for upwards of a year past and since the establishment of the issue until the present time, May 28th, 1823, the periodia hemorrhage has commenced, continued and declined with the flowing of the catamenia. These periodical returns of hemorrhage have been observed a sufficient length of time to prove that the flowing of blood did not take place from any unusual condition of the ulcer itself, but that it was in some way or other produced by a general state of the sanguiferous system on the periods of the flowing of the menses.

Richerand, in his System of Physiology, observes, "that many deviations are incident to the menstrual discharge," and "which," he says, "should be considered as real diseases." "Thus," he adds, "the uterine discharge has been known to be supplied by bleeding from the nose, hœmoptysis, mebœna; sometimes by unusual evacuations of blood from the eyes, ears, the *fore finger;* from ulcerated surfaces over different parts of the body." By way of explanation he remarks, that "it may be easily conceived, that the different parts of the sanguiferous system may supply each other's place, and that the bloody secretion, in which menstruation consists, in failure of the

internal surface of the uterus, may be carried on by another part equally provided by capillary vessels; but that similar deviations may take place, for the fluids secreted by the conglomerate glands, as urine, bile, saliva, is difficult to believe, notwithstanding the many testimonies and authorities that may be brought in support of this opinion."

Medical Society of the State of New York.—In the transactions of this Society, at their annual session for 1823, which we have lately received, we find an important opinion expressed, concerning the term of study required previous to licensure in medicine. As the subject is one of general interest to the profession at large, we deem it our duty to give it a place in our Journal.

"Whereas information has been given to this Society, that the censors of a certain County Society of this State, have construed the laws regulating the practice of Physick and Surgery, in such a manner as materially to abridge the term of study of candidates for licence, therefore

"Resolved, That, in the opinion of this Society, the term of four years study admits of no reduction on account of any vacations which are usually allowed in Colleges and Academies —that the law requires that four complete years should be devoted exclusively to the study of Physick and Surgery, unless the candidate produce written testimony that he has attended at least one year to the study of the Latin or Greek languages, or both, or that he has attended a complete course of medical lectures at some public institution, either of which shall be taken in lieu of one year's study—and that in no case, shall any candidate be examined, who has not studied three complete years, exclusive of all classical studies, or attendance on medical lectures as above stated."

Believing, as we do, that the existing law of the State is eminently calculated to elevate the character of the profession, and concurring in the exposition here given of its provisions, we do hope, most sincerely, that they may be carried into complete and efficient operation.

New York Med. and Phys. Journ.

PITTSBURGH MEDICAL SOCIETY.

At an annual election held on Saturday, June 28th, 1823, the following gentlemen were chosen officers of the Society for the ensuing year:

Dr. Joel Lewis, President.
Hanson Catlett, Vice President.
W. F. Irwin, Chairman.
Joseph Gazzam, Corresponding Secretary.
L. Callaghan, Recording Secretary.
C. F. Brunot, Treasurer.
C. L. Armstrong, Librarian.

During the past year the following gentlemen were admitted to Ordinary and Honorary membership:

ORDINARY MEMBERSHIP.

Dr. L. Callaghan, *of Pittsburgh.*

HONORARY MEMBERSHIP.

W. P. Dewees, M. D., *of Philadelphia.*
J. C. Rousseau, M. D., "
Joseph Parrish, M. D., "
Joseph Hartshorn, M. D., "
Thomas C. James, M. D., *Professor of Midwifery, in the University of Pennsylvania.*
Granville Sharp Pattison, Esq., *Professor of Anatomy in the University of Maryland.*
Haratio G. Jameson, M. D., *Baltimore.*
James Jackson, M. D., *Boston.*
A. J. Dean, M. D., *Chambersburg, Pa.*
Charles Meredith, M. D., *Bucks County, Pa.*
Charles Caldwell, M. D., *of Transylvania University, Lexington, Ky.*
Samuel L. Mitchill, M. D., L. L. D., *New York.*
W. Zollickoffer, M. D., *Frederick, Md.*
John D. Godman, M. D., *Cincinnati, Ohio.*
Daniel Drake, M. D., "
Daniel McPhail, M. D., *Wooster, Ohio.*
J. F. D. Lobstein, M. D., *Lebanon, Pa.*
J. S. Irwin, M. D., *Loudonville, Ohio.*
J. J. Le Roix, *Dean of the Medical Faculty of Paris.*
M. Dubois, M. D. *Paris.*
M. Halle, M. D., "
M. Alibert, M. D., "

M. Regnault, M. D., "
M. Dupuytren, M. D., "
M. Fruey, M. D., *Marseilles.*
M. Caillan, M. D., *Bourdeaux.*
M. Guerin, Jr., M. D., "
M. Dufour. M. D., *Toulouse.*
M. Forbes, M. D., "
M. Fabrian, M. D., "
— Hufeland, M. D., *Berlin.*
M. Bernstein, M. D., "
Professor Osiander, *Gottinger.*
Professor Meckel, *Halle.*
Professor Sprenger, "
M. Frank, M. D., *Wilna.*
M. Klein, M, D., *Stutgardt.*
Professor Kuhn, *Leipsic.*
John E. Stock, M. D., *Bristol, England.*
Alexander Pettigrew, Esq., *Professor of Anatomy in Glasgow.*

JOSEPH GAZZAM, *Corresponding Secretary.*

TO THE MEDICAL PROFESSION.

In almost every section of our country, epidemick fevers, peculiar in character, and singularly fatal, have, for the last few years, prevailed to an alarming extent.

Desirous of improving science, and serving the cause of humanity, by directing the attention of physicians to their investigation, the proprietor of the American Medical Recorder is induced to offer a premium of One Hundred Dollars, or a Gold Medal of equal value, with an appropriate inscription, (at the option of the author,) for the best essay on their causes, nature, mode of treatment, &c. &c.

The essays will be submitted to the decision of not less than four respectable physicians; and in order to obviate the chance of partiality, the candidates are requested to forward their essays unsigned, accompanied by a sealed note containing their name and address.

The successful essay will be published in the American Medical Recorder; and as it is desirable that it should appear in the number for January, 1824, communications (post paid)

to the publisher, will be received until the 15th of November next.

Philadelphia, May, 1823.

N. B. Should the plan taken by the publisher of this Journal, be successful in obtaining the desired information, and the cause of humanity benefitted, it is his intention to offer a premium annually, for the best essay on some popular subject connected with the science of medicine.

Gentlemen who send essays, are particularly requested to write them in a very legible hand.